For producers of Sand nd Gravel, Crushed Stone, 'ement, Lime, Gypsum, and other nonmetallic minerals

APRIL 1957

PIT and QUARRY

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New Open Pit Operation of Pacific Coast Borax at Boron, Calif. (See Page 104)

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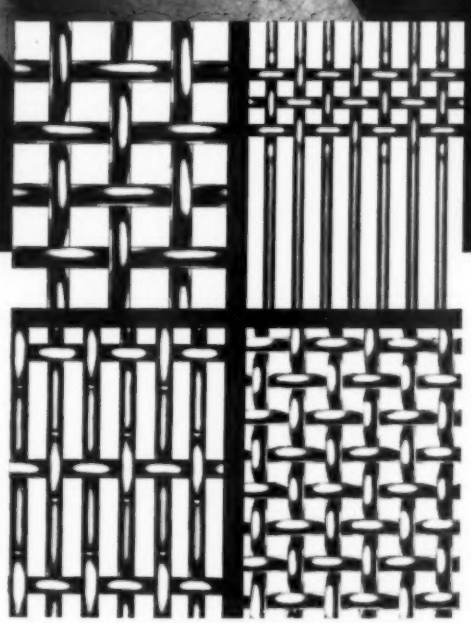

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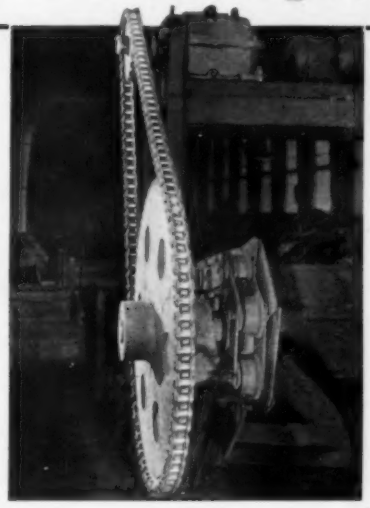

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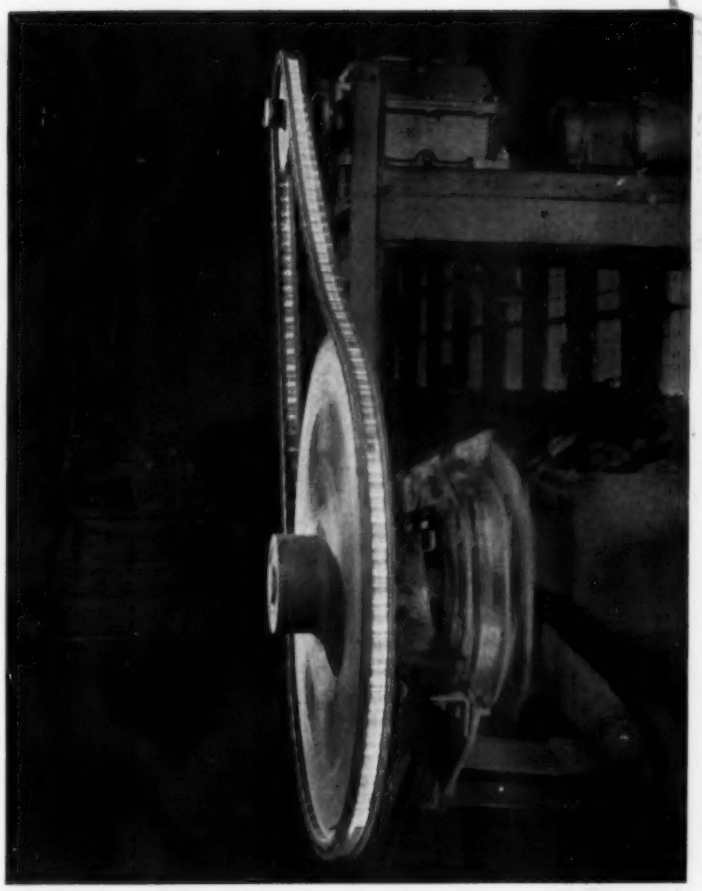

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pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

APRIL 1957 Vol. 49 No. 10

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Cover Picture

• Reminiscent of the Roman arenas of antiquity, the PIT AND QUARRY cover picture this month shows the preliminary stripping operations in the development of Pacific Coast Borax's new open-pit mine near Boron, Calif. The new surface operation will replace the firm's deep mining, in which recovery is restricted due to large pillars and other ore areas which have to be left to support the weak overlying formations. At completion, the pit will measure 900 by 1,400 ft. with 50-ft. benches.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals.

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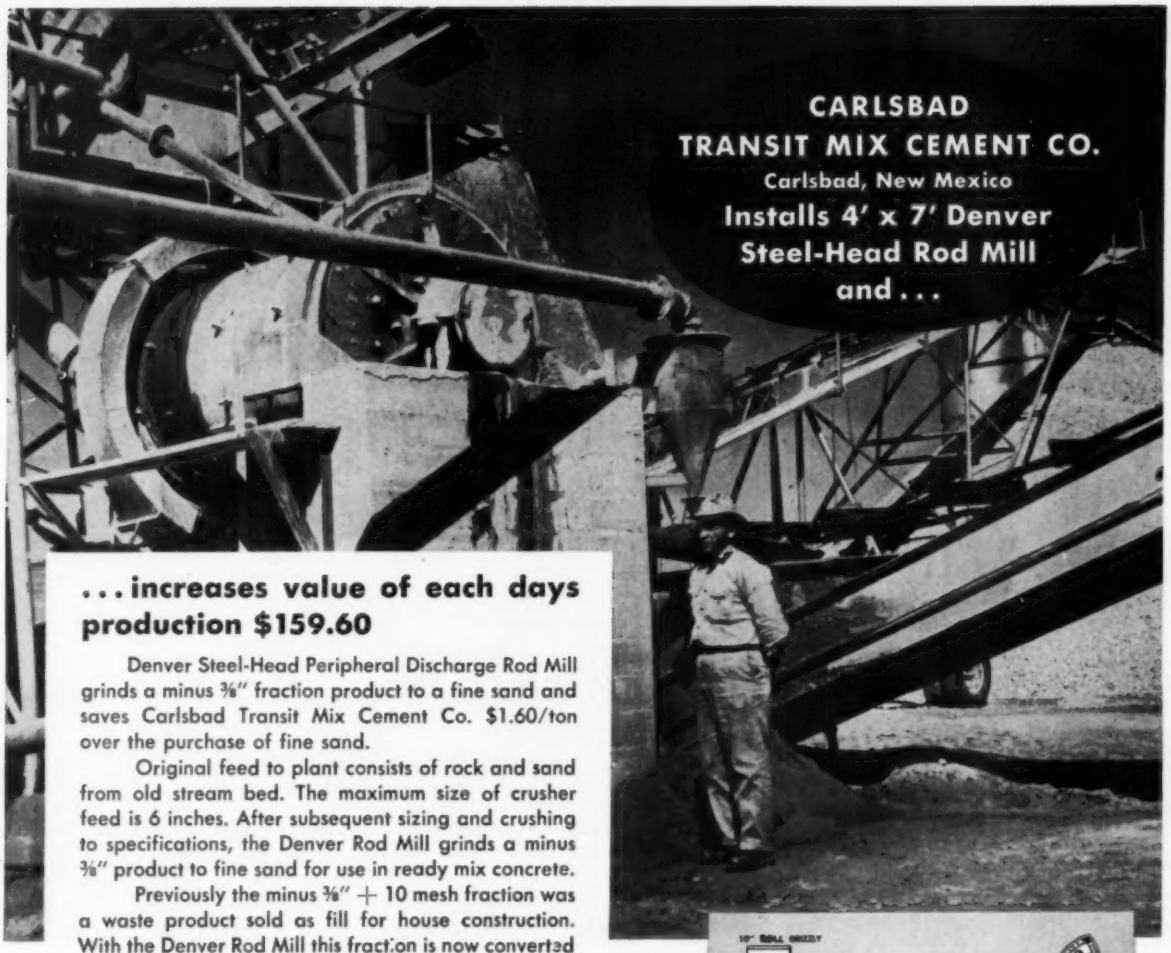
To subscribers: When requesting change of address, kindly send old as well as new address.

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX



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TRANSIT MIX CEMENT CO.
Carlsbad, New Mexico
Installs 4' x 7' Denver Steel-Head Rod Mill and . . .

. . . increases value of each days production $159.60

Denver Steel-Head Peripheral Discharge Rod Mill grinds a minus ⅜" fraction product to a fine sand and saves Carlsbad Transit Mix Cement Co. $1.60/ton over the purchase of fine sand.

Original feed to plant consists of rock and sand from old stream bed. The maximum size of crusher feed is 6 inches. After subsequent sizing and crushing to specifications, the Denver Rod Mill grinds a minus ⅜" product to fine sand for use in ready mix concrete.

Previously the minus ⅜" + 10 mesh fraction was a waste product sold as fill for house construction. With the Denver Rod Mill this fraction is now converted to a useable sand product. The increase in value of this feed to the Denver Rod Mill, taken out as sand, is now estimated at $1.60/ton, or $159.60 per day. Feed to the Denver Rod Mill is approximately 12T/HR. The plant operates at approximately 50T/HR.

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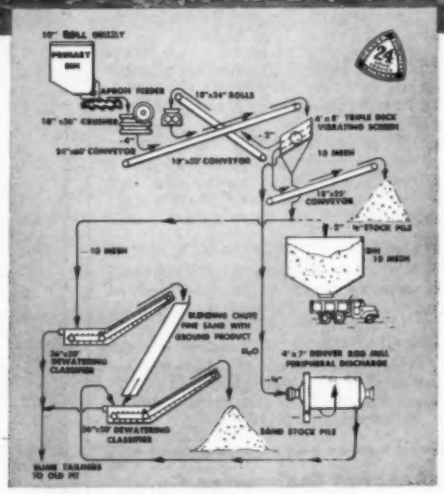
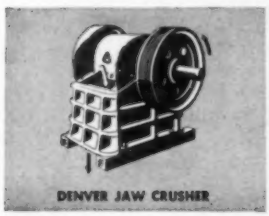
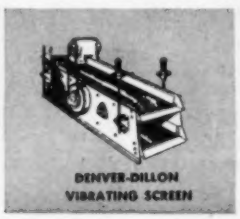


Flow sheet shows installation of 4' x 7' Denver Rod Mill which grinds minus ⅜" fraction to fine sand at a saving of $1.60/T.


DENVER JAW CRUSHER


DENVER-DILLON VIBRATING SCREEN

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DENVER ROLL CRUSHER

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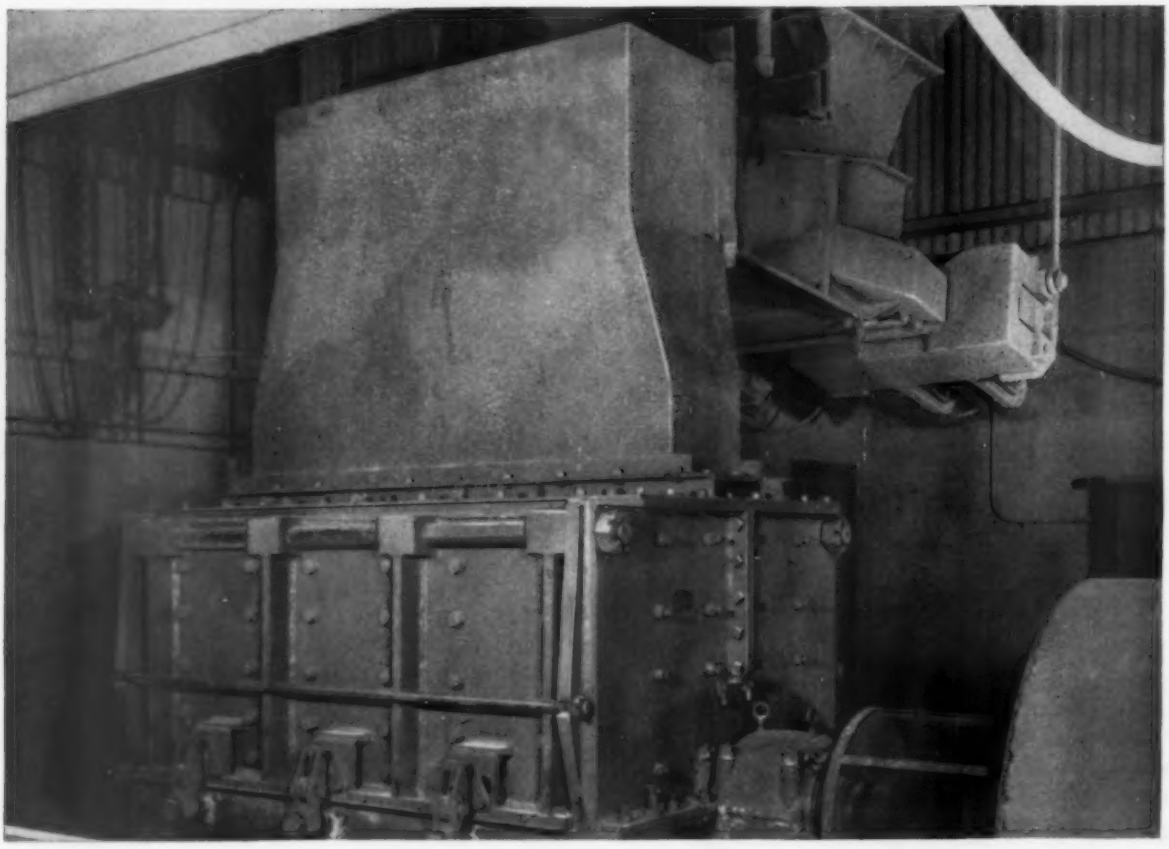

42" x 82" Jeffrey Type B Reversible Impact Swing Hammer Crusher mill at South Dakota State Cement plant, Rapid City, South Dakota. Crusher is fed by 5' x 6' Jeffrey enclosed electric vibrating feeder.

350 to 400 tons of limestone per hour are reduced by this Jeffrey crusher to ¾" x 0" size. The chief engineer for this plant says they are well pleased with this crusher and its Jeffrey feeder.

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Bulletin 868 describes this crusher. For a copy, or for help in solving any reduction problem, write The Jeffrey Manufacturing Company, Columbus 16, Ohio.

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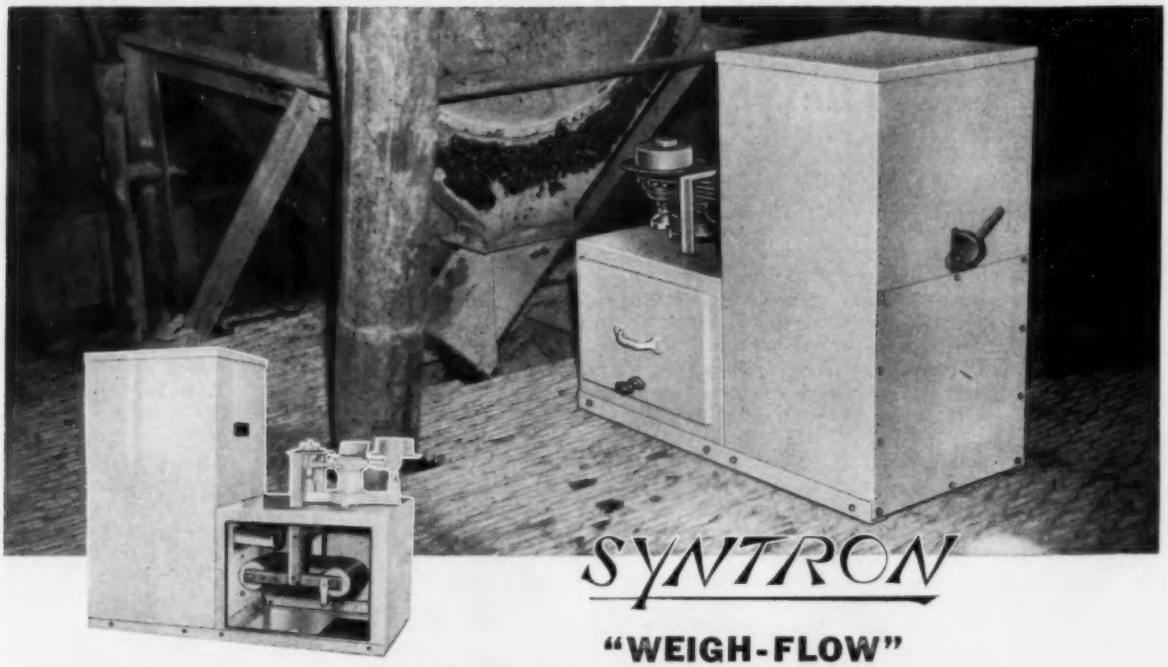

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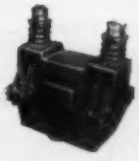

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The Editor's Page

The Shortage of Engineers

THE shortage of engineers and scientists is still one of the most important problems with which this country is faced. The rapid mechanization of industry, the increasing complexity of manufacturing and processing methods, and the expanding horizons of atomic energy for both peaceful and military purposes are creating a demand for such talent which we are not now able to meet. The extensive publicity given to this problem in the last few years has reversed the downward trend, and more of our young men and women are pursuing technical studies, but this increase has barely kept pace with the current growth in demand without affecting the orginal shortage.

The latest authentic information on this subject is contained in a recent release of the Engineering Manpower Commission of the Engineers Joint Council. The figures presented show a substantial increase in engineering graduates, but not up to the increase predicted earlier, and far below our needs. It was shown that in 1955-56 B. S. degrees in engineering totalled 23,606; M. S. degrees 4,705; and Ph.D. degrees 610. The figures in 1954-5 were 22,589, 4,379 and 599, respectively. Enrollments in engineering colleges were 77,738 compared to 72,825, and this means that if the normal 57 percent of those who enter graduate with the bachelor's degree, we may expect graduations to reach 44,000 in June 1960. This is below present needs and falls far short of estimated requirements for that year.

THE B. F. Goodrich Company recently published a comprehensive study of trends in scientific and engineering manpower designed to provide information upon which the extent of our manpower needs may be gauged and to suggest possible areas of action for meeting the needs. According to this study: "Unless our nation is able to accelerate the rate by which we are training scientists and engineers, we face a possible cumulative inadequate supply of more than 90,000 new scientists and engineers within the next ten years. It might be another 10 to 15 years before the deficit could be made up and our economy could resume moving forward at its present pace.

"It is to our grade and secondary schools that we must look for the correction of this trend. Our young people must be interested at an early stage in scientific and engineering careers. They must receive adequate preparation in the secondary schools, training that will reduce the high number who presently fail to complete their technical college courses.

"Scientists and engineers are currently being graduated at the rate of 186 out of each 1,000 students who earn college first degrees. To meet our basic needs for continued growth and expansion, 205 to 215 out of each 1,000 should become scientists or engineers. The tight supply could therefore be eliminated if just 20 to 30 more students out of each 1,000 graduates attained degrees in science and engineering.

"This could be accomplished if a relatively few more students who had not planned to enter college enrolled in science and engineering and if the high percentage of college failures among science and engineering students could be reduced without lowering academic standards."

WHAT engineering schools are doing along these lines is evident from an article in the November, 1956, issue of *Mineral Industries,* published by the College of Mineral Industries of Pennsylvania State University. These schools realize, "that many high school graduates cannot continue with their education because of lack of money. It costs a minimum of a thousand dollars a year to go to Penn State. We are working with the mineral industries to establish scholarship programs, concentrating on scholarships for entering freshmen. Ceramic, metallurgy, mining, fuel, and petroleum companies are particularly active in supporting this program. Scholarships are commonly $500 for the year, continuing for the sophomore, junior, and senior years if a good scholastic average is maintained. . .

"Our aim is to help financially all of those serious students who want to study in the mineral fields but whose financial resources are such that this is impossible or discouragingly difficult. Many of our friends in industry feel this same way and are giving the program excellent support. If the student does not obtain a freshman scholarship but will come here and let us know of his serious financial need, we frequently can help him out through a part-time job in one of the departments. If he makes a good scholastic record, other scholarships are available for the sophomore, junior, and senior years."

In the same issue was published a list of the many scholarships which were granted for the current year at this college, many of them financed by manufacturers of mining machinery and a few by producers of nonmetallic minerals.

Other leading engineering schools are also doing everything possible to attract more promising young students to these courses and to encourage preparation for engineering in high schools, and they all need more support, particularly from those industries which desperately need their graduates. This help is not only financial, in the way of money for scholarships; it also includes encouraging the right type of young men to enter the various fields of engineering.

THE nonmetallic minerals industries are seriously affected by the shortage of engineers and technicians and they have a vital stake in overcoming it. Demand for their products continues to grow, especially for those supplying materials for the expanded highway program. The best and most accessible deposits are rapidly being worked out, specifications and other requirements are becoming more stringent, and new uses for their products are constantly being developed. As a result, more and more technically trained men are needed. All producers in these industries must co-operate in every way possible to help overcome this basic shortage.

Walter E. Trauffer

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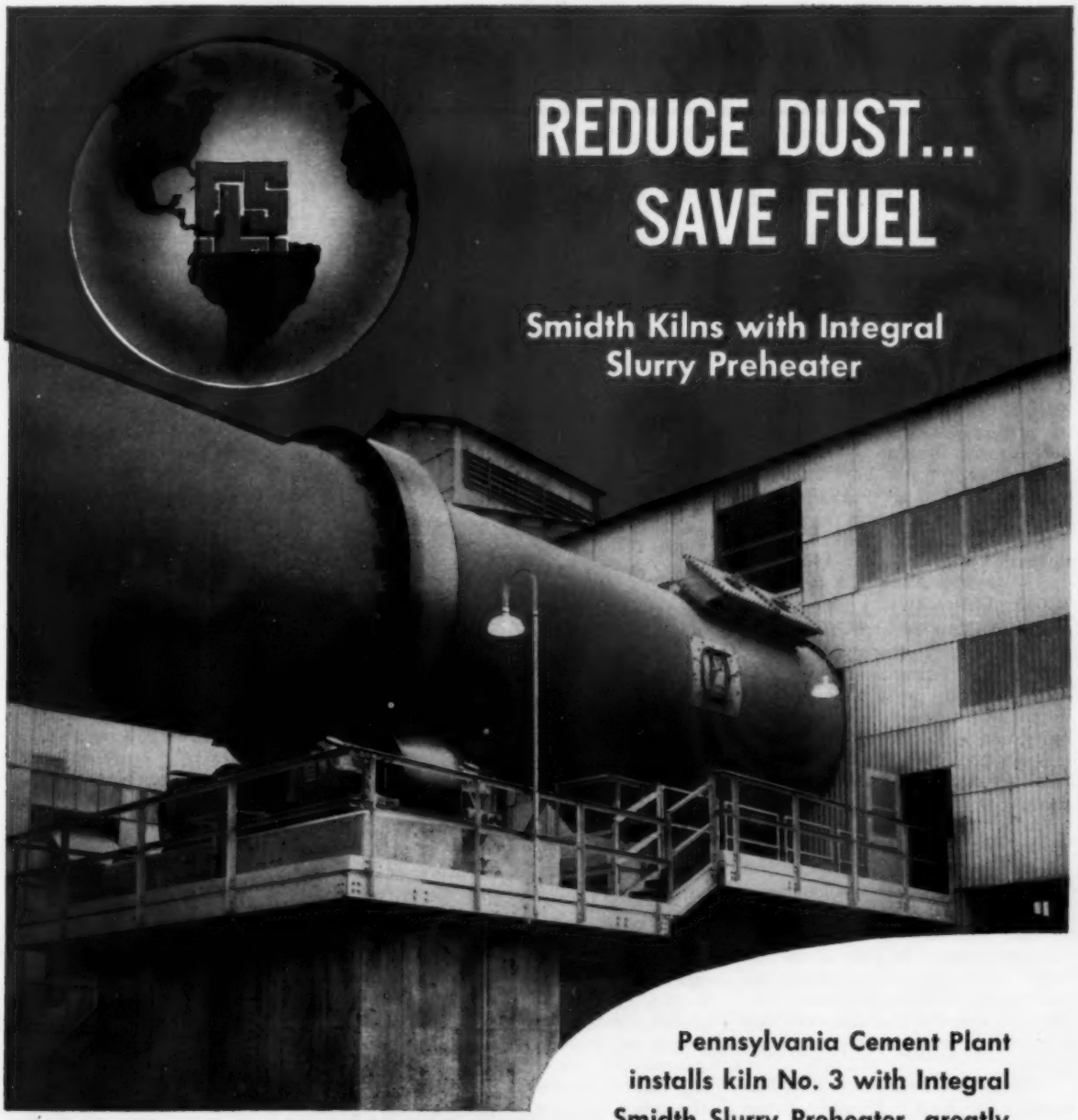

Pennsylvania Cement Plant installs kiln No. 3 with Integral Smidth Slurry Preheater, greatly reducing dust loss and fuel consumption.

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Washington News Letter

By S. HERBERT UNTERBERGER

IN Washington particularly, there is great interest in the 1956 statements which many corporations are now issuing. The story they tell is important, not only for assessing the degree of prosperity enjoyed in 1956, but also, from the Federal Government's point of view, for predicting what this year's total tax income is likely to be. Since corporate profits are an important source of federal revenue, their size may determine whether the budget will, in fact, be balanced; whether there may be a surplus; and, curiously, whether there will be price inflation or stability.

Conflicting Interpretations

Unfortunately, the record is not a clear one. This may be illustrated by the diversity in the reports found in publications with a well earned reputation for incisive analysis. Viewing basically the same data, they have come to quite different conclusions.

U. S. News and World Report states, in its March 15 issue, that "More and more companies and their stockholders are finding reason to worry about profits.

"The annual reports for 1956, now being issued by most of the nation's well-known corporations, tell many a tale of a drop in profits. The drop, in quite a few instances, has taken place in spite of an increase in sales. . . ."

"On the other hand, the First National City Bank's *Monthly Letter* has this to say, "Corporate earnings for 1956 reported to date show an overall total closely in line with 1955, reflecting business prosperity generally, the rebound from the third quarter industrial dip caused by the steel strike and auto model changes, and the continued enlargement of investment in plant and equipment. Our tabulation of the '56 statements of 2,550 companies gives a combined net income after taxes of approximately $16,100,000,000, compared with $15,600,000,000 in 1955, an increase of 3 percent. The number of companies with increases exceeded the number with decreases by about three-to-one, the same ratio as a year ago." Both talk about the "profit squeeze," but their interpretation of its seriousness seems to be quite different.

One fact stands out, regardless of which report you read. It is that the ratio of profits to sales in 1956 is generally well below what it was in 1955. Thus, of the 38 companies tabulated by *U. S. News and World Report,* whose earnings in 1956 were below 1955, all but 13 showed sales in 1956 above 1955. The First National City Bank also reported that "In numerous cases gains in net income were less proportionately than those in sales, indicating narrower profit margins." From their broader tabulations, they were able to show that about 7 percent of the companies had higher net incomes despite smaller sales. There were, truly, the most fortunate of the group. About 20 percent of the companies showed larger sales but lower earnings, while about 15 percent showed both lower sales and lower earnings. The remaining 58 percent showed increases in both sales and earnings, many to all-time highs.

No doubt, there are particular companies and even some industries which are in trouble. Public utilities, such as electric power, gas, and telephone, continued their outstanding record of growth. They benefited substantially from the record-breaking capital investment program. At the other end, there were the railroads, which had a small increase in operating revenues, but this was more than offset by their increase in operating expenses, particularly taxes, so that their net income declined by 4 percent. Among manufacturing industries, most did well except those in the automobile and parts group, whose sales fell drastically in 1956. Omitting that group, manufacturing earnings rose 8 percent.

If the year 1956 were broken up into its parts, it would be found that there was a substantial increase in the fourth quarter earnings—up 32 percent from the third quarter. The labor unions, particularly, are fond of pointing to this whenever the subject of the "profit squeeze" is raised. They like to say that this demonstrates that any downward trend has been reversed. This conclusion is called into question when it is recalled that in 1955, the jump from the third to the fourth quarter was even greater.

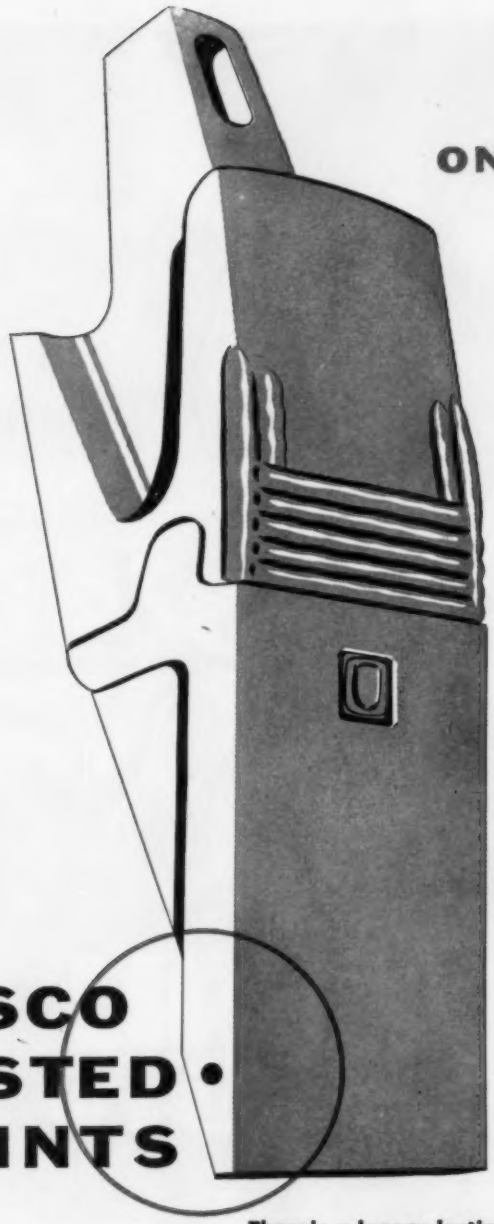
Adding to the difficulties of interpreting the profit trend, is the fact that several abnormal things occurred during 1956, the most important of which may have been the steel strike, the unexpected drop in automobile sales, and the drought which affected sales to farmers in some sections of the country.

In addition, 1956 saw the broader use of various accounting practices which had the effect of reducing reported net income. Among these were accelerated depreciation of plant and equipment, especially of facilities for defense production, and the expansion of the practice of using the L.I.F.O. or "last-in-first-out" method of inventory evaluation. The latter practice reduces stated profits resulting from price inflation, of which there was a substantial amount last year. Both of these practices, which probably reduced reported 1956 earnings, may later result in increased reported earnings when the full depreciation has been taken or the price trends change.

A final indication of how solid the profits may have been is found in the extent of cash dividend payments. Generally, boards of directors are disinclined to pay out large and increasing dividends where the profits situation is shaky. The U. S. Department of Commerce has reported that cash dividend payments during the year 1956 rose 8 percent over the previous year to set a new record. Increases occurred in all the major categories of manufacturing, except transportation equipment, as well as in mining, trade, electric and gas utilities, communications, and finance.

In this connection, the tabulation prepared by the *New York World Telegram and Sun* showed a rise in the volume of cash dividends paid out in the first half of 1956 over the first half of 1955 and then a decline in the volume of cash dividends paid

(Continued on page 77)



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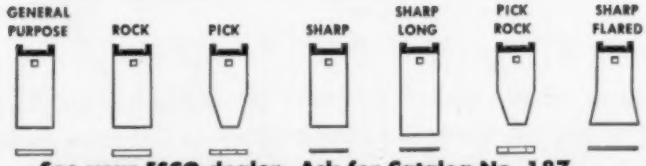

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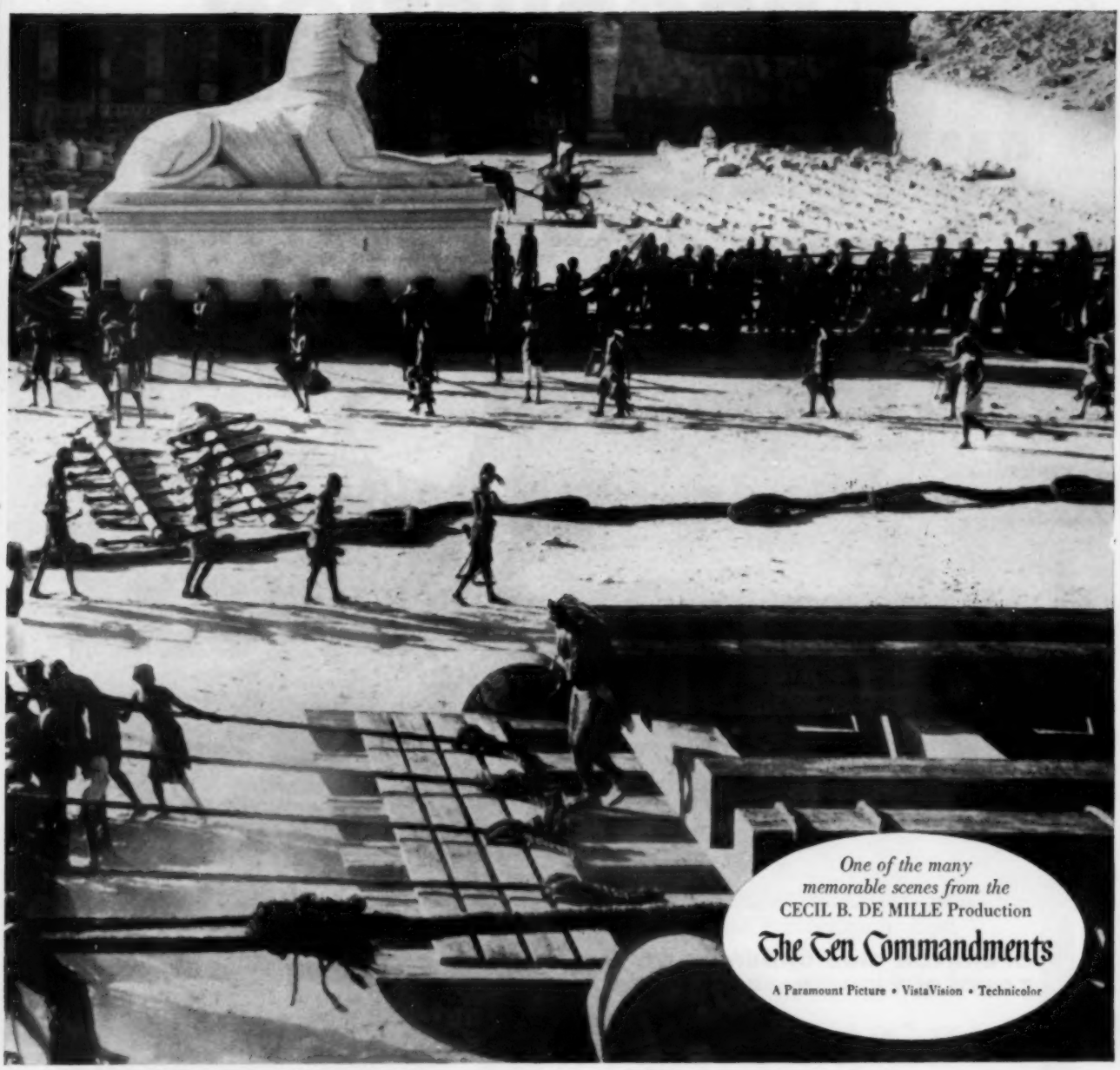
One of the many
memorable scenes from the
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The Ten Commandments
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the size of nine pyramids

Hewitt-Robins has specified Enka High Tenacity Rayon in their 1.8 mile conveyor belt system for Southern Pacific at the Great Salt Lake. Here, Enka Rayon is clearly demonstrating its outstanding advantages. At a record 8,800 ton-miles-per-hour, Enka Rayon provides durable strength with flexibility, exceptional resilience, tension and abrasion resistance.

This means that by specifying Enka High Tenacity Rayon in your conveyor belts you get the above advantages and you get them at lower cost. Call or write for further information.

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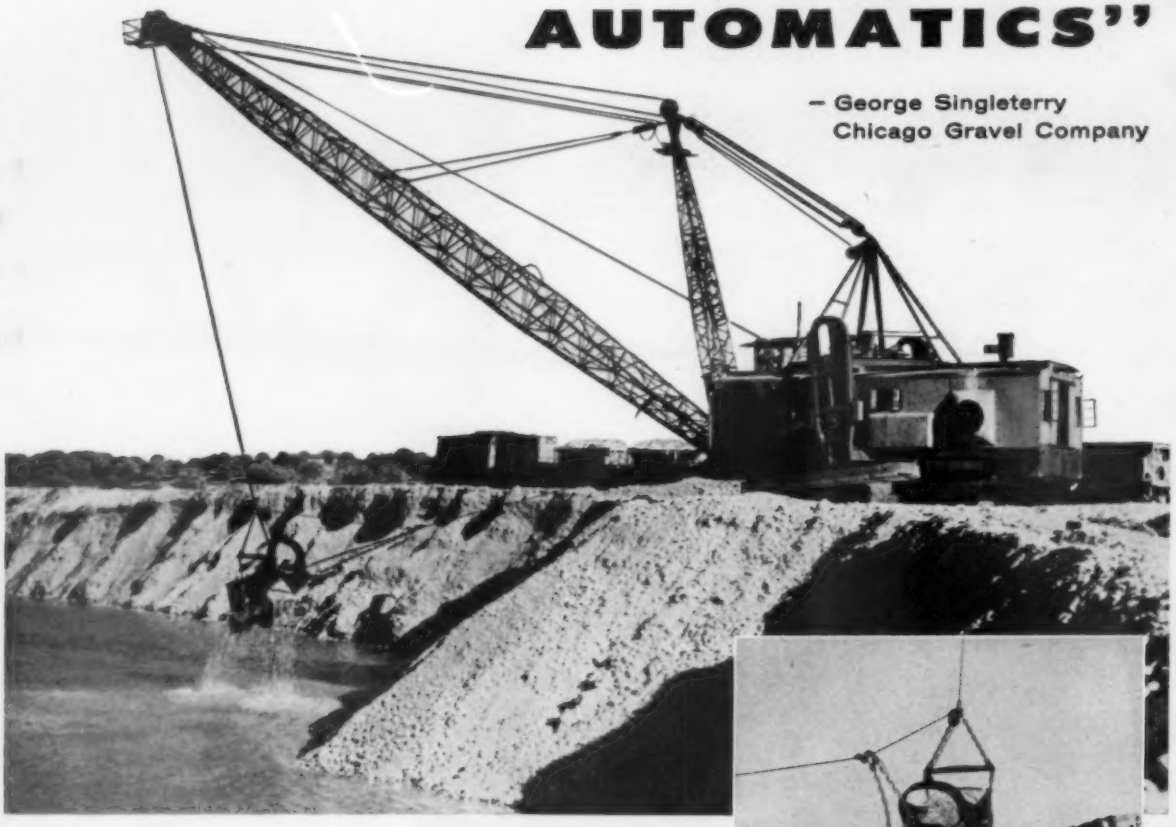
– George Singleterry
Chicago Gravel Company



OPERATOR DIGS UNDER 35 FT. WATER... TAKES OUT FULL RATED LOAD EACH CYCLE

Here's why Page Automatics are the preferred bucket at Chicago Gravel Company, one of Northern Illinois' largest producers.

This Page Model 618 Dragline, equipped with a 5 yd. Page Automatic Bucket, is loading 33 yd. capacity cars (inset) at an average rate of one car per 5 minutes. The Bucket is digging 35 ft. below the water's surface and comes up with a full load in less than 2 lengths of the bucket. That's *digging* that means *production!*

There's no substitute for digging ability in a Dragline bucket. Your investment in a machine is too big to settle for less than the best digging bucket you can buy. And when it comes to digging, no bucket will equal a Page Automatic – the bucket that's built to dig faster, and carry out more on every cycle.

Ask your nearby Page Automatic Distributor for full details. Write for Catalog A57.

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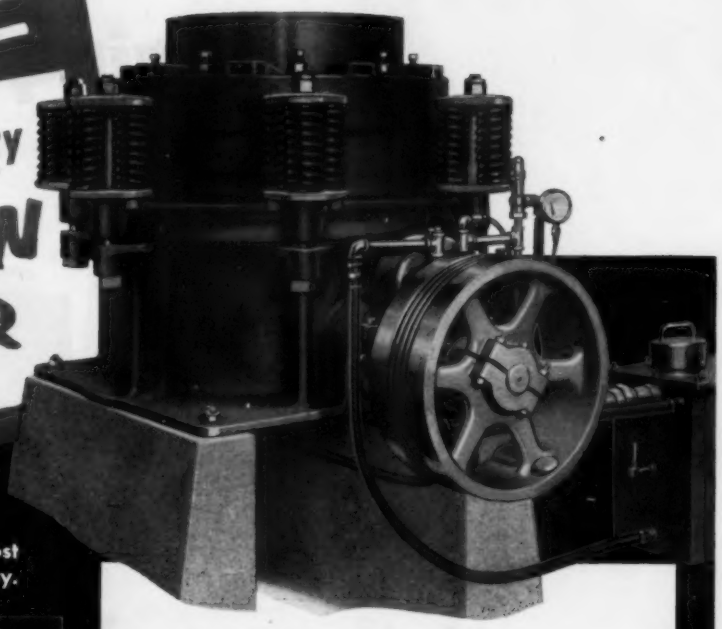

Bulletin 270 tells why it's the most economical machine you can buy.

1 All Steel Construction.
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10 Capacities: 15-70 tons hourly.

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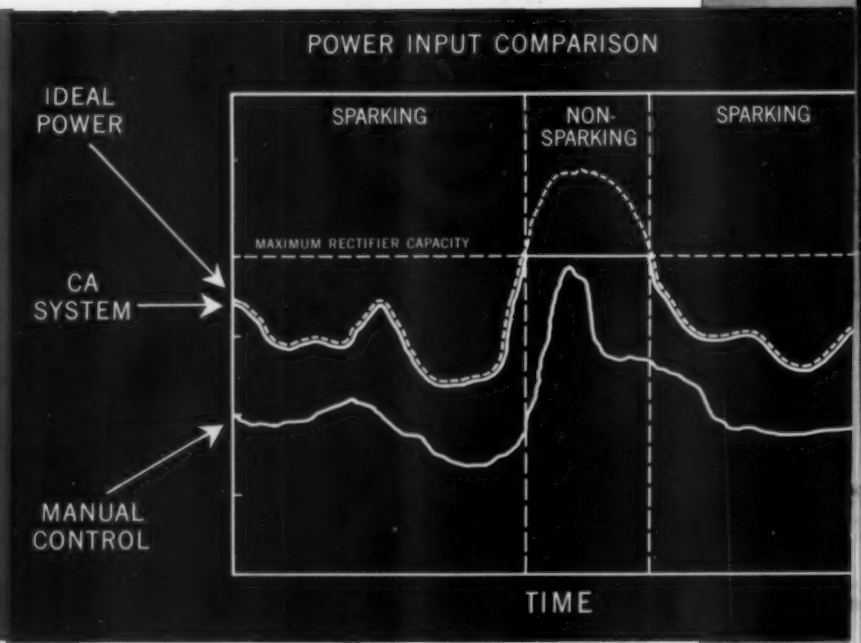
RESEARCH-COTTRELL'S

New CA System brings Auto

to precipitators

Higher "around-the-clock" collection efficiency without any manual adjustments. That sums up the major advantages of Research's new Cottrell Automation System.



The chart at the left shows how the CA System provides these advantages. As you know, ideal electrical power input to a precipitator is not constant. It varies with changes in gas composition, temperature, rate of flow and humidity, as well as characteristics of the dust, such as size, electrical resistivity and extent of build-up on the electrodes. With conventional controls, manual adjustments cannot keep pace with these changing conditions. This difference between *ideal* electrical power and *actual* power input, under manual control, is shown in the chart. This

mation

difference means lower collection efficiency. The fast acting electronic circuits of the CA System provide the best practical approach to ideal electrical power. During periods of sparking, electrical power input is controlled by the optimum sparking rate, which can be easily pre-set to any value between 0 and 500 sparks per minute. Under some conditions power input would have to be increased beyond the capacity of the electrical equipment in order to maintain this optimum sparking rate. During such periods the power input is governed by the *capacity* of the electrical equipment. This condition is shown in the center vertical section of the chart.

For more information on this new automation development write for your copy of Bulletin CA. It has a detailed description of how the Cottrell Automation System works and how higher "around-the-clock" collection efficiencies and lower operating costs are obtained.

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RC172

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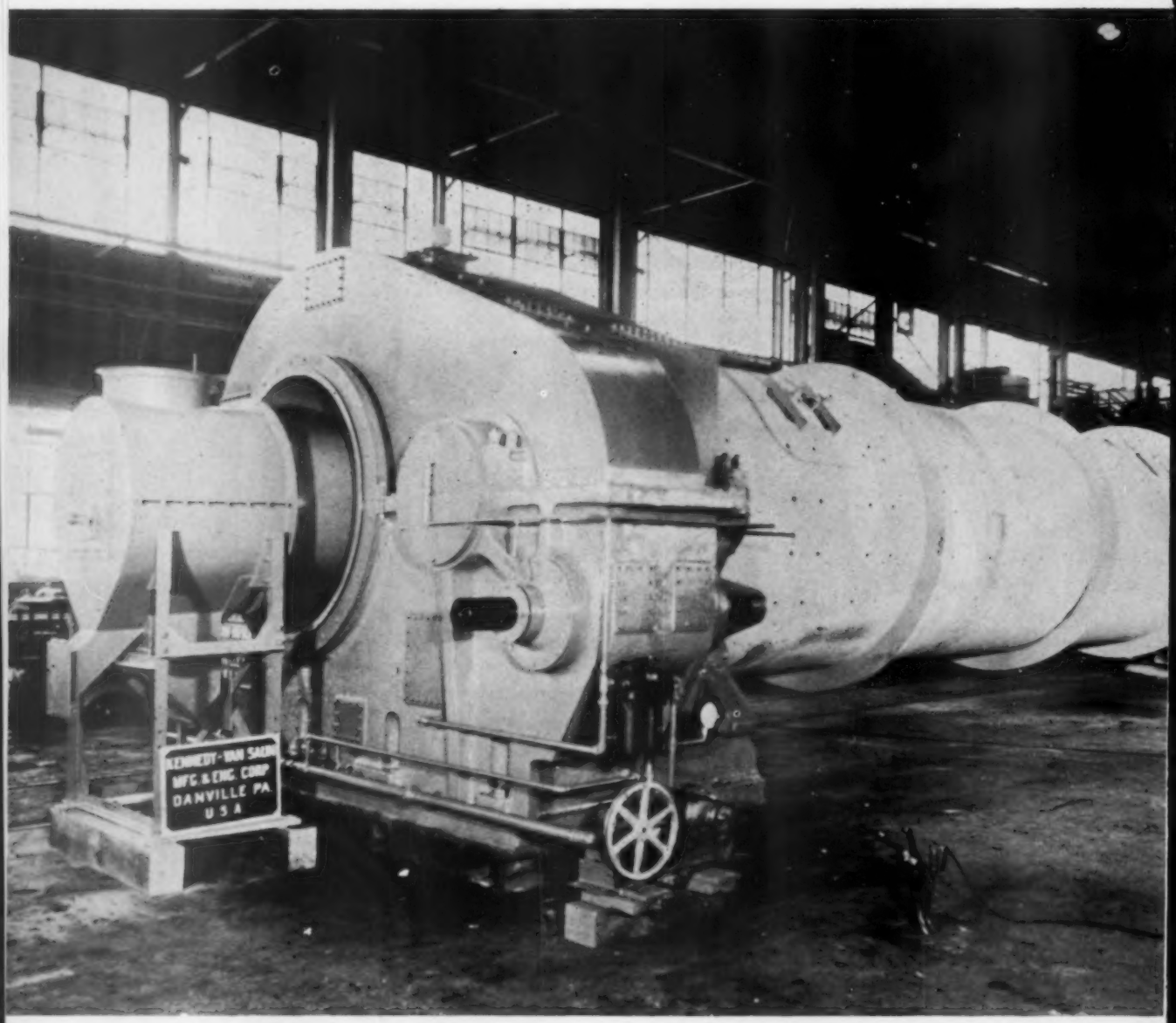

ONE OF FIVE 8' X 36' KVS INTEGRAL GEAR DRIVE, 3-COMPARTMENT MILLS. BUILT FOR GRESIK CEMENT PLANT, ISLAND OF JAVA, INDONESIA.

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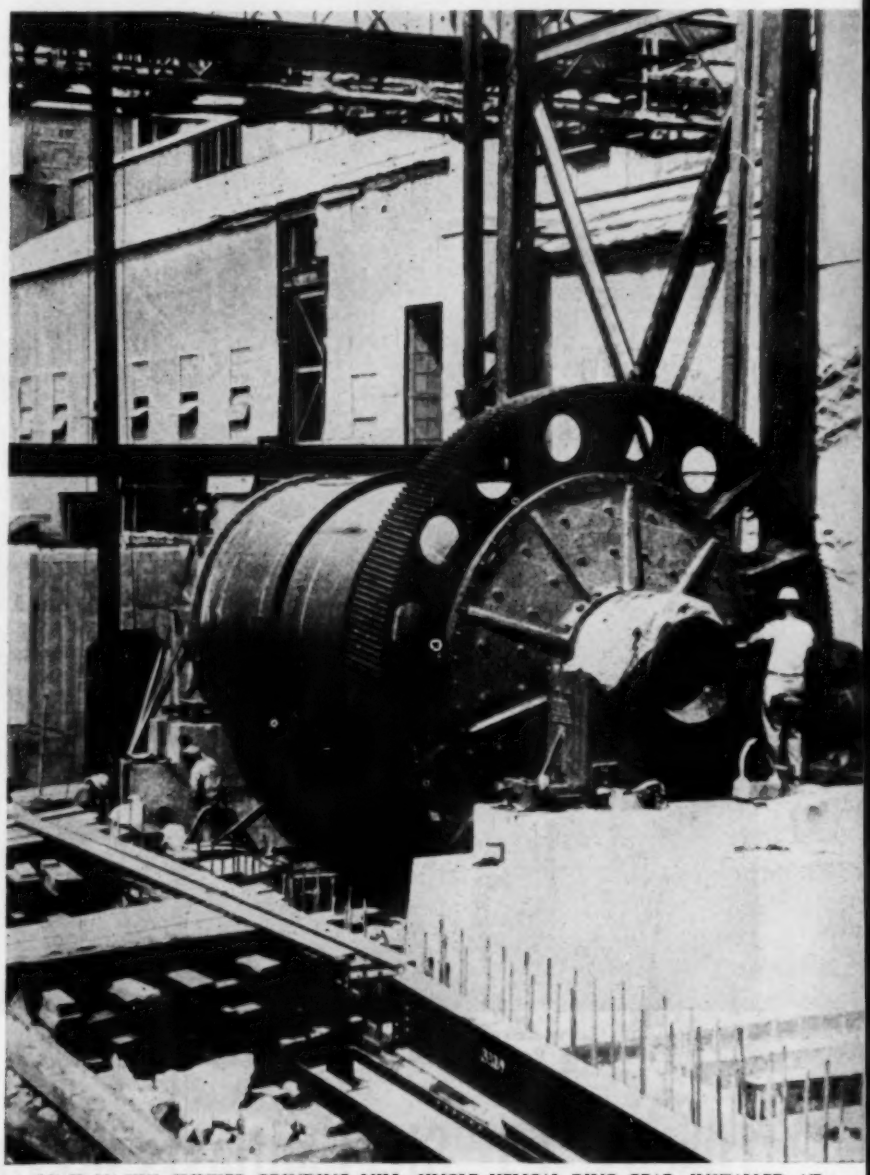
- Coolers, Dryers
- Preheaters, Deheaters
- Belts, Conveyors
- Pneumatic Transport Systems
- Waste Heat Boilers
- Pulverized Coal Firing Systems
- Steam Generators
- Asbestos Plants
- Complete Lime Plants
- Complete Cement Plants
- Complete Aggregate Processing Plants



11' X 20' KVS CLINKER GRINDING MILL, SINGLE HELICAL RING GEAR. INSTALLED AT PETOSKEY, MICH., PLANT OF PENN-DIXIE CEMENT CORPORATION.

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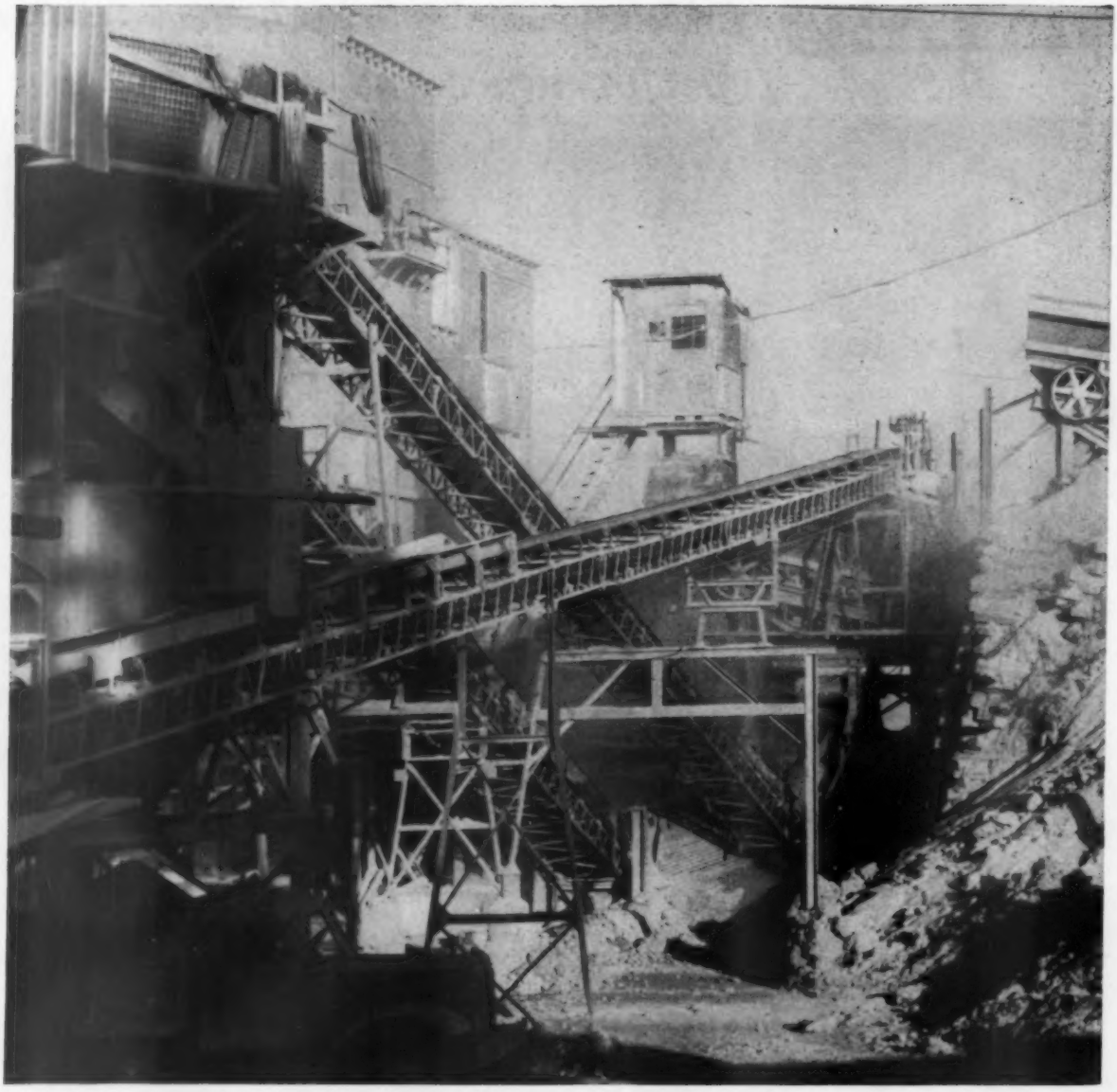


At Bradford Hills Quarry, Downingtown, Pa., equipment of Lukens "T-1" steel of 321 min. Brinell hardness now handles 1000 tons of limestone daily — so far has lasted more than 18 times as long as metals previously used for the same purpose.

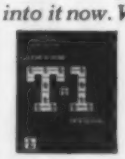
Lukens "T-1" Steel outlasts previous metals 18 to 1

TRADEMARK

Maintenance and replacement costs dropped sharply in chute liners, impact crusher caps, and similar parts when Bradford Hills Quarry switched to Lukens "T-1" steel. These critical parts once wore out in a month. Now they show little or no wear *after 18 months.*

Whether you handle stone, coal, or metal ores, Lukens "T-1" steel in areas hardest hit by punishing impact and abrasion will save you money too. Wear plates, dredge pump liners, storage bins, and fly-ash collectors are just a few typical applications.

Lukens "T-1" steel retains its remarkable combination of hardness and toughness at temperatures well below zero. *Look into it now. Write for informative illustrated booklet, "Lukens 'T-1' Steel." Address Manager, Marketing Service, Room 903, Lukens Steel Company, Coatesville, Pennsylvania.*



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News of the Industry

Construction Progresses At Baja California Plant Of Cementos California

Construction is proceeding on schedule for the first cement plant in Baja California, Mexico.

The dry-process plant, being erected at Ensenada by Cementos California S.A., will supply the needs of Lower California, principally the communities of Tia Juana, Tecate, Mexicali, and Ensenada, all of which are currently experiencing phenomenal growth.

Much of the equipment, including the 8- by 9- by 270-ft. kiln, is being supplied by the Kennedy-Van Saun Manufacturing and Engineering Corporation. Buell dust collectors and Fuller grate-type coolers will be installed on the kiln when it is erected late this summer. The plant is scheduled to begin operations in December, 1957, or January, 1958. Daily capacity will be 200 metric tons (about 1,175 bbl.).

Limestone requirements will come from an ancient high-calcium shell deposit in the mountains below Ensenada and will be shipped 35 miles by water to the plant.

Cementos California S.A. is now occupying a new office building in downtown Ensenada. Jose de J. Clark is president; Jose C. Gallego, vice-president; and Walter Hussong, secretary-treasurer. Rafael Ulibarri, engineer, is general manager.

Volunteer Portland Cement To Expand Knoxville Plant

In anticipation of the federal road-building program and other new demands, the Volunteer Portland Cement Company, Knoxville, Tenn., has initiated a $435,250 expansion at its facilities there. Completion is expected by the end of this year.

The expansion will increase Volunteer's capacity by 30 to 40 percent, according to Charles L. Lewis, president. In 1956 Volunteer produced more than 2,000,000 bl. of cement. In 1950 the company expanded facilities at this plant to boost capacity by 40 percent. Since Volunteer began its operation 29 years ago, output has more than doubled.

Equipment to be added includes a primary crushing station; secondary crusher and screening station; conveyor galleries; buildings for storage, raw mill, kiln burner and feed, and coal unloading; and slurry basin and bridge.

Whitehead Brothers, Inc., New York, N. Y., is planning to establish a sand processing plant on a 400-acre tract of land near Camden, N. C.

Coming Events

April 8-10, 1957—Dallas. 51st annual convention, Autoclave Building Products Association. Statler Hilton Hotel.

May 15-17, 1957—Hot Springs, Va. 22nd annual meeting, National Industrial Sand Association. The Homestead.

June 6-8, 1957 — Colorado Springs. Annual convention, National Lime Association. Broadmoor Hotel.

June 16-21, 1957—Atlantic City. 60th annual meeting, American Society for Testing Materials. Chalfonte-Haddon Hall.

July 11-13, 1957—Hot Springs, Va. Directors' meeting, National Crushed Stone Association. The Homestead.

July 29 - August 2, 1957 — San Francisco. World Conference on prestressed concrete. Fairmont Hotel.

August 25-31, 1957—Murray Bay, Canada. Semi-annual directors' meeting, National Sand and Gravel Association and National Ready Mixed Concrete Association. Manoir Richelieu.

Marquette Cement Co. To Spend $9,744,000 in 1957 For Plant Improvements

Directors of the Marquette Cement Mfg. Co., Chicago, Ill., have approved new capital expenditures of $5,363,000 for cost-saving installations at the company's plants in Nashville, Tenn., Rockmart, Ga., and Superior, Ohio. This appropriation brings authorization for improvements in 1957 to $9,744,000.

Expansion at the Nashville plant, which will cost approximately $2,500,000, calls for the installation of a new wet-process kiln, over 400 ft. in length, to replace the present two smaller kilns. It will be among the largest pieces of moving machinery in use, and will utilize furnaces yielding more than 2,700 deg. F.

Other new equipment related to this operation will include a coal mill, a quick-quenching clinker cooler, and an electrical dust precipitator. Appropriations have also been made for improvements in the raw and finish-grinding departments and for installations at the Martha (Wilson County) quarry.

Presently in the engineering stage, the expansion program is due for completion by the end of 1957.

Edna Bay Pure Stone Co. To Build Limestone Plant

Officials of the Edna Bay Pure Stone Company, Dallas, Tex., have announced the selection of a site at Vancouver, Wash., for the construction of a limestone processing plant. Process engineering has been completed on the design of the plant, and a starting date will be set soon.

According to plans announced last summer, the $5,000,000 plant will have a daily capacity of 300 tons of lime. Limestone will be hauled to Vancouver from a quarry at Edna Bay, Alaska. The Alaskan holdings were leased last year from the Aluminum Company of America.

Co-owners of the Edna Bay Pure Stone Co. are Kent B. Diehl and Cullen F. McDougal.

Net income of the Riverside Cement Company in 1956 was $4,526,135, a $509,762 increase over the 1955 amount.

Carl G. Hogberg Promoted To Post of Vice-President Of Michigan Limestone Div.

The appointment of Carl G. Hogberg as vice-president of the Michigan Limestone Division of the United States Steel Corporation, was announced recently by C. F. Beukema, Michigan Limestone president.

Mr. Hogberg was graduated from the Michigan College of Mining and Technology, Houghton, Mich. In 1935, he joined U. S. Steel at the South Chicago works. He was transferred to Pittsburgh in 1941, where he was primarily associated with blast furnace raw materials development and quality control problems in their production.

Mr. Hogberg went to Detroit in June, 1955, as assistant to the vice-president of the Michigan Limestone Division, and was promoted to assistant vice-president in 1956.

A number of technical articles on blast furnace design and operation prepared by Mr. Hogberg have been published in national and international publications. He holds several patents in this field and has been active on various iron and steel industry technical committees.

Carl A. Hogberg

In 1945 he received the coveted J. E. Johnson Award of the American Institute of Mining, Metallurgical and Petroleum Engineers, and in 1950 he was honored by a Kelly Award from the Association of Iron and Steel Engineers for his technical contributions to the steel industry.

Cement Company Reports Show Net Sales, Earnings Following Upward Trend

Net income of the Bessemer Limestone & Cement Company in 1956 amounted to $1,791,036, against $1,584,792 in 1955. Bessemer's 1956 cement output was 235,000 bbl. over 1955.

Directors of the Lone Star Cement Corporation report a net income of $15,990,657 for 1956, an increase over the 1955 total of $14,779,047. Sales increased to $94,253,663 from $91,513,786 a year earlier.

Eugene D. Hill, president of the Louisville Cement Company, reports a record year for his firm. Net income after taxes rose to $2,560,429 in 1956 from $2,191,791 in 1955. Net sales increased to $14,364,000 against $13,248,000 in 1955.

For the year ended December 31, 1956, the Whitehall Cement Manufacturing Company showed net sales totaling $8,347,796, compared with the 1955 figure of $7,555,401. Net income amounted to $1,004,714, compared with $907,095 for 1955.

Net earnings of the Calaveras Cement Company in 1956 totaled $1,436,604; last year's net gain was $1,356,563. Net sales totaled $12,085,811 in 1956, and $10,317,857 in 1955.

Net income of the Medusa Portland Cement Company in 1956 was $4,190,244, a slight increase over $4,008,423 a year ago. Sales in 1956 totaled $37,506,824, compared to $36,410,489 the previous year.

The Dewey Portland Cement Company reported 1956 net profits of $2,597,118, compared with $2,809,212 in 1955. Net sales totaled $12,685,100, down from $14,112,002 for the previous year.

Peerless Cement Corporation's net sales in the 12-month period ended April, 1956, amounted to $15,071,593, against $13,597,910 in the comparable period a year earlier. Net earnings for 1955-56 were $2,232,346, compared to $1,911,112 in 1954-55.

Sales of the Keystone Portland Cement Company amounted to $12,676,442 in 1956, and earnings $1,776,075. The 1955 totals were as follows: sales, $10,085,723; earnings, $1,332,883.

Superior Portland Cement, Inc., and its subsidiaries report for the year ended December 31, 1956, a net income of $820,013, compared with $1,047,390 in 1955. Net sales amounted to $6,668,641 last year, and $7,610,617 in 1955.

U. S. '57 Output of Perlite Expected to Rise 12 Percent

Richard S. Funk, administrative secretary of the Perlite Institute, has predicted a 12 percent increase in expanded perlite sales for 1957 and an industry volume of approximately $15,350,000. Sales of perlite increased 9.8 percent in 1956 from the previous year. Output of the expanded volcanic lava, produced by 84 plants in 30 states, is also estimated to have risen by the same percent to 260,000 tons.

Houdaille Industries Renames North Jersey Quarry Company

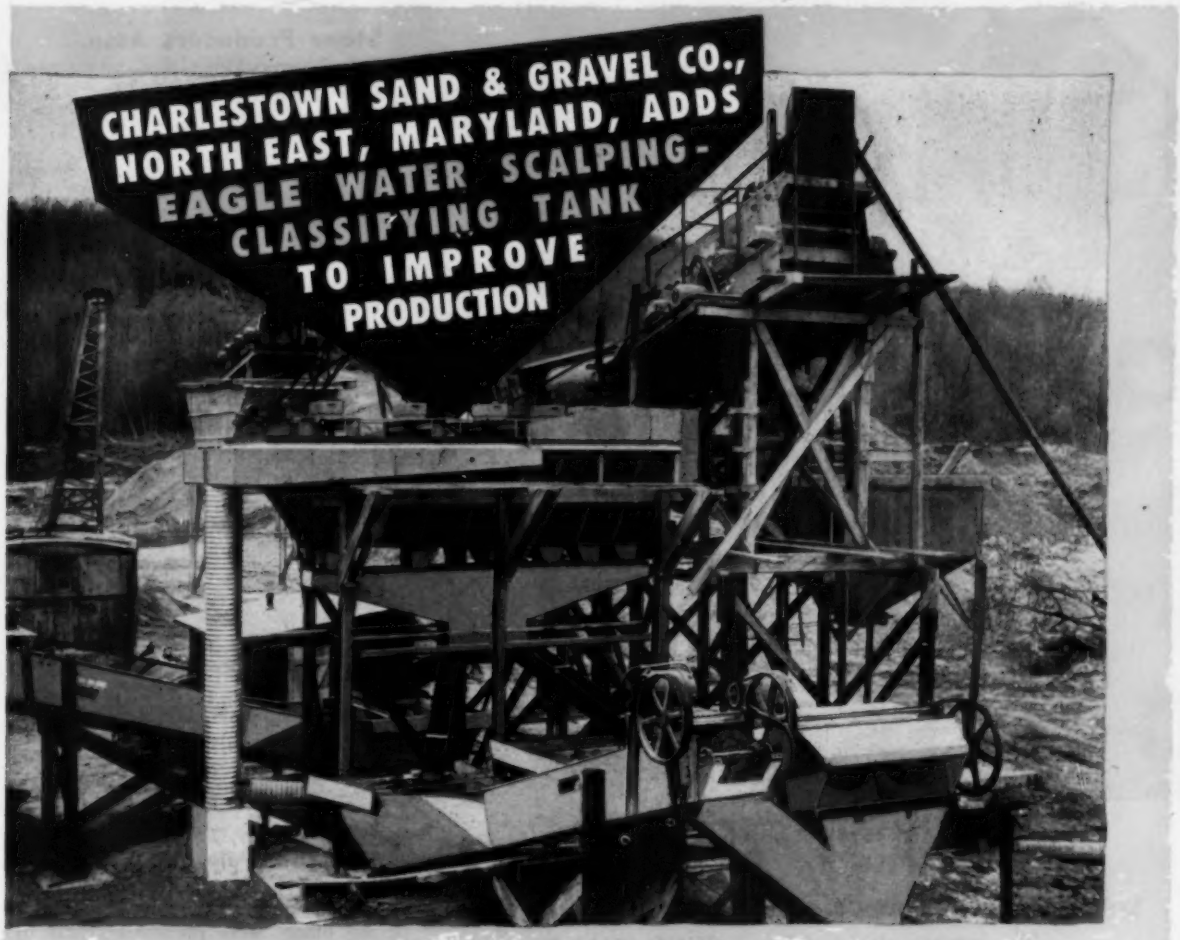
The North Jersey Quarry Company, one of the state's largest producers of sand, gravel, stone, concrete and allied products, has been redesignated as Houdaille Construction Materials, Inc., according to an announcement by Ralph F. Peo, president of Houdaille Industries, Inc., the parent company.

Houdaille Industries acquired North Jersey Quarry Co. and its subsidiaries, Consolidated Stone & Sand Company and Portland Sand & Gravel Company in March, 1956. Later in the year the Commonwealth Concrete and Seguine-Bogert properties were also purchased. In order to further corporate identity and to facilitate expansion of services from all units within the Houdaille group, it was deemed advisable to make this change of name, applying only to the North Jersey Quarry Co. All other construction materials producing units within the Houdaille-owned group will continue their present identities.

Houdaille Construction Materials, Inc., will continue to occupy the former North Jersey Quarry Co. offices at 10 Park Place, Morristown, N. J. Executive and production personnel will continue in their present capacities.

The last action in the sale of the Superior Portland Cement Company to the Lone Star Cement Corporation was taken recently when stockholders of the former approved the transaction unanimously at a meeting representing about 90 percent of the company.

The Meade Sand & Gravel Company, Renton, Wash., has opened its third plant for the production of ready-mixed concrete, crushed rock, sand, and gravel. William B. Byrns was named general manager of the new plant.



Quantity and quality of material improved by plant conversion

Charlestown Sand & Gravel Co. at North East, Maryland—in the northeast corner of the state—had been operating with several EAGLE Fine Material Screw Washers-Classifiers-Dehydrators until recently.

They converted their plant, adding an EAGLE 20′ Water Scalping-Classifying Tank with Power-Operated Bleeder Valves and 3-Cell Collecting Blending Flume. The new tank in conjunction with their 20″ dia. x 25′ double screw unit gives them (1) a larger volume of material, (2) higher quality material, and (3) now makes possible gradations and blends to meet exacting specifications.

If your present plant has you stymied from the profit angle, perhaps Eagle Screw Washers or an Eagle Water Scalping-Classifying Tank—or a complete washing-classifying section—can solve your problem. Why not capitalize on Eagle's experience and service. There's an Eagle factory-trained distributor near you to serve you.

Write for Catalog and Name of User Near You!

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EXPERIENCE, PROGRESS, SERVICE SINCE 1872

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133 HOLCOMB AVE., DES MOINES, IOWA

multiwall valve troubles with Bemis SHUR-SEAL® valves

sleeves out of place

sleeves missing

valves stuck together

The integral sleeve of Bemis SHUR-SEAL Pasted Valve Multiwalls is a special extension of any of the plies or of several of them, extended to the same or different lengths. Thus the valve can be tailor-made to fit your product. It can NOT be out of place . . . or missing . . . or stuck together.

With the integral sleeve, the flap is always there, always in place, always acts the same in every bag. It opens quickly and easily at the packer. It can never interfere with the packer spout entering the valve and it will never be pushed into the bag to get into the product.

A tailor-made variation of the SHUR-SEAL valve will provide you with the exact bag for your product and packing requirements. Check with your Bemis Man... he'll help you determine just which variation of the SHUR-SEAL valve is correct for you.

Another Bemis first . . .

for YOUR benefit

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

Stone Producers Assn. Of Pennsylvania Convenes For Annual Sessions

The annual business meeting of the Pennsylvania Stone Producers Association, held at the Hotel Penn-Harris, Harrisburg, Pa., on January 24, was attended by 75 members.

In addition to association business and the election of new officers, the program included a report by H. H. Wagner, general manager, and a talk by Frank Witkoski, chief research engineer of the state highway testing laboratory. An interesting item reported by Mr. Witkoski concerned the recent installation of a spectrograph in the laboratory. This is expected to reduce appreciably the length of time required to analyze the materials which the highway department purchases.

Association officers elected during the meeting include the following: president, R. B. Garman, Tyrone Lime & Stone Co., Tyrone; vice-president, John Teeter, John S. Teeter & Sons, Gettysburg; treasurer, H. M. Binkley, Binkley & Ober, Inc., East Petersburgh; and secretary, E. J. Breneman, E. J. Breneman, Inc., Pottstown.

Ideal's West Coast Office Opened in Palo Alto, Calif.

Ideal Cement Company's West Coast administrative and engineering offices were opened recently in Palo Alto, Calif.

Headquartered in Palo Alto with their staffs are the following: Eldred Bollinger, general manager of all West Coast operations; Alfred G. Lang, chief engineer; and Richard Hussey, Pacific Coast labor relations chief. Ideal's regional sales office is in San Francisco, and the home office is in Denver, Colo.

Production of portland cement in Argentina hit a record figure in 1956 of 1,966,000 metric tons, an increase of 8 percent over the 1955 total of 1,823,000 tons. This maintains the steady upward curve registered since 1952, when national output was 1,532,500 tons. Imports of cement dropped to 50,000 tons last year.

Plans for the construction of three new plants have been announced by officials of the Flintkote Company, East Rutherford, N. J. A building materials plant will be built at Ennis, Tex., a gypsum plant will be erected at Sweetwater, Tex., and a third for the production of insulating materials is to be located at North Judson, Ind.

Big Michigan Tractor Shovel loads out 4,400,000 lbs. of open hearth slag per day

Clearing ground for the Lake Calumet Harbor near Chicago, Contractor C. J. Wilson is removing 700,000 yds. of open hearth slag dumped by neighboring steel mills. This material weighs approximately 4000 lbs. per yd., is extremely abrasive and tough to dig. With one 2¼-yd. Michigan Tractor Shovel, Wilson is loading out 110 trucks per day—10 yd. six-wheelers. That's 4,400,000 lbs. of slag per day!

Does work of 1½-yd. shovel

Wilson says that he couldn't beat this production with a 1½-yd. shovel. Calculating the hourly cost (initial cost, depreciation, maintenance, etc.), of a dragline versus the Michigan, the Michigan does the job at least 40% cheaper. With the abrasive ground conditions which prevail on the job, Wilson is naturally enthusiastic about being able to do the job on rubber-tires.

Clean design of the Michigan bucket mechanism provides good dumping clearance. Note the heaping bucket load: 40-degree low-level tipback guarantees heaping loads of any material which can be heaped.

"Can't beat the front-end"

Since the first Michigan Tractor Shovel was introduced early in 1954, more and more contractors have found that this machine will handle jobs which they'd never even attempted with rubber tired equipment. Veteran crawler-loader owners, like C. J. Wilson agree that you can't beat the front-end on this machine. It will out-dig any make or type of Tractor Shovel, bar none.

Balanced power and weight

The best way to understand the Michigan's operational advantages is to watch one *ease up to a pile of tough material and come out with a heaping bucket load.* You don't have to ram the pile to get penetration. The Michigan's combination of bucket action, weight and power enables the machine to *dig its way* into the pile. 133 diesel horsepower flows smoothly through the 3-to-1 torque converter, 4-speed power-shift transmission and heavy duty drive axles right out to four big tires. Planetary gears in the wheel hub eliminate axle breakage . . . they take 70% of the torque load off the shafts.

Standard on all models

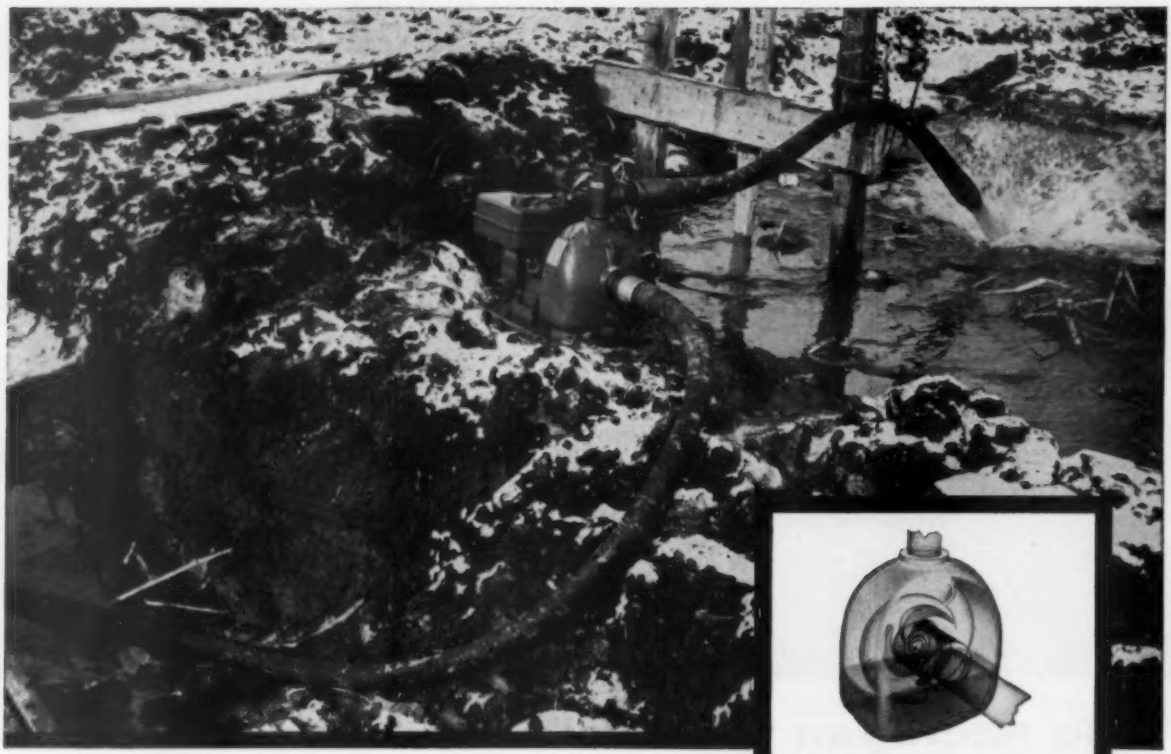
Clark torque converter, power-shift transmission and planetary wheel drive axles are standard equipment on every model in the Michigan Tractor Shovel line—1-yd., 1⅝-yd. and 2¼-yd. capacity. In each capacity, a Michigan Tractor Shovel will give you more useable digging power and traction than you've ever seen on this type of machine—faster production, lower cost per yard. For proof, ask your Michigan distributor to demonstrate—*you name the job.*

Michigan is a registered trade mark of

CLARK® EQUIPMENT

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 14, Michigan

See the New Gorman-Rupp "80 Series" Pumps at Your Nearest Distributor!



SHOW STEALER!

At A. R. B. A. and on the job, too!

Here's an exciting new line of Gorman-Rupp centrifugal pumps that prime . . . with important features never before offered to pump users. Straight-in suction! No check valve! These pumps never fail, never quit. Nor will solids foul them*.

The new Gorman-Rupp design delivers pumped liquid direct to the eye of the impeller, increasing capacity, efficiency and lift. Simpler. Lighter in weight. Fewer parts. Now available in sizes 1½", 2" and 3".

You saw them at the Road Show!

PUMP AT REST—Captured liquid retained for priming. Note absence of the usual check valve.

PRIMING ACTION—Entrained air (B) escapes at (A) to be discharged. Priming liquid returns (C) to entrain more air.

PUMPING ACTION—Straight-in suction voids entrance restrictions. Water enters direct to the eye of the impeller.

THE GORMAN-RUPP COMPANY

305 Bowman Street • Mansfield, Ohio

*Provided standard equipment supplied with pump is used.

Stemming material delivered by 2¼-yd. Michigan 175A

Commutes 2 miles between Arizona pits . . .

Versatile Michigan pays for itself on a multitude of open pit jobs

This 2¼-yd. Michigan Tractor Shovel works at one of the biggest open pit copper mines in Arizona. At this location two pits are being mined: one a 4000 x 6000 pit up to 600-ft. deep; the other a new cut two miles away. Between these pits, the 27-mph Michigan commutes on its own power to handle a multitude of jobs.

Cleans up excess ore

Prior to blasting, the Michigan cleans up excess ore around the toes of the benches. It takes less than two minutes to put a heaping load into a 6-yd. dump truck. This efficient clean-up job makes for fuller breakout of material when blasting.

Delivers stemming material

No matter how hard the drillers try to dispose of the mud from the churn-type blast hole drills, trucks are often unable to get through to deliver stemming material. The 4-wheel drive Michigan easily works through the mud, delivers loads of stemming material to the powder loading points to keep shots on schedule.

Cleans up around shovels

When the crawler bulldozers come off the mine floor for repairs, the 133-hp Michigan does the clean-up work around the power shovels. Working on a new addition to the concentrating plant, the Michigan handles sand, aggregate and cement at the concrete plant. The Michigan also built a baseball diamond and part of an air strip by hauling and spreading the necessary material. Its big rubber tires even did the compacting!

A versatile work horse

With Clark torque converter, power-shift transmission and planetary-wheel axles, the Michigan Tractor Shovel delivers *more useable power and traction than you've ever seen on this type of machine.* It will handle amazingly heavy jobs—in addition to the routine assignments which affect the performance of the more expensive equipment, like power shovels, drills and rolling stock. For proof that the Michigan is in a class by itself, ask for an on-the-job demonstration. *You name the job.*

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 23, Michigan

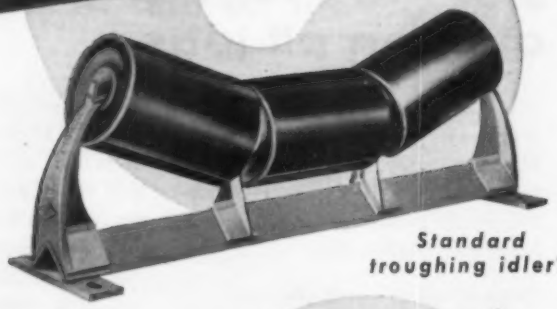
Michigan is a registered trade mark of

CLARK® EQUIPMENT

What do you need in IDLERS?

Unit stand with return idler and tripper rail?

Self-aligning troughing idler?



Standard troughing idler?

Now shipping from stock in Birmingham — all conveyor accessories and standard units. Consult us on "specials" — see our nearest office.

CG-5702

Continental has them!

INDUSTRIAL DIVISION
CONTINENTAL GIN COMPANY
BIRMINGHAM, ALABAMA

CGC ATLANTA CLEVELAND DALLAS KNOXVILLE MEMPHIS MOBILE NEW YORK 17

Ideal Cement Company To Build New Facility Near Albuquerque, N. M.

Cris Dobbins, president of the Ideal Cement Company, Denver, Colo., has announced plans for the construction of a new cement plant near Albuquerque, N. M.

Ideal has shipped cement into New Mexico for over 50 years, and has long owned an excellent deposit of limestone a few miles east of Albuquerque. For several months engineering studies have been under way, and since early in January surveying and site preparation crews have been on the ground doing preparatory work.

Officials have decided to erect a plant of 1,000,000-bbl. capacity, with a single kiln, the latest type of fuel economizer, and electronic dust control. Provision will be made for doubling capacity when necessary.

Cost of the first stage of the installation will be $10,000,000 to $12,000,000. Completion is scheduled for the early part of 1958.

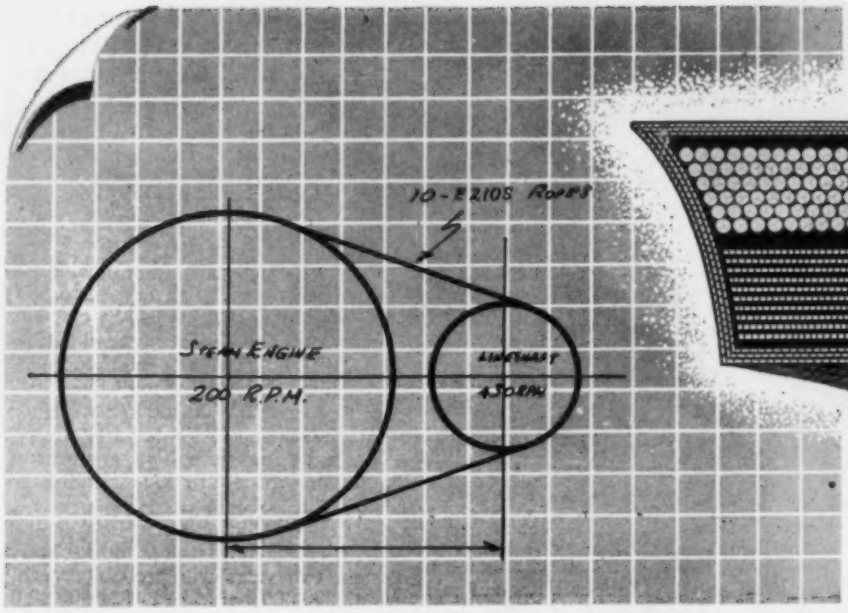
Mississippi Lime Company Starts Novel Safety Contest

"Safety Sweepstakes" is the name given a novel contest initiated on January 1 at the Ste. Genevieve, Mo., plant of the Mississippi Lime Company of Missouri to publicize safety and promote safe working conditions.

For the purposes of the contest, the entire Ste. Genevieve operation is separated into eight divisions. Each division completing a calendar month without one lost-time injury becomes eligible for a drawing. The names of all men who have worked in a division during the month are placed in a container. Names are drawn, and each of the winners receives 15 silver dollars.

A large sign erected near the plant entrance keeps the workers posted daily on the status of their division. Beside the name of each division is a green light and a red light. The green light is turned on to indicate that there has been no lost-time injury during the current month; the red light indicates that an accident has occurred, and the division is ineligible.

Pacific Cement & Aggregates, Inc., reports a net income of $1,531,438 for 1956. This figure compares with a net income of $852,117 for 1955. The 1956 figures include the Santa Cruz cement division operations for 9½ months.



MORE HP DELIVERED PER $ INVESTED

On any new drive design—where you have limited space or you need to keep weight down—here is an important fact that can save you money:

A Gates Super Vulco Rope drive will deliver more horsepower per dollar invested than any standard V-belt drive.

Actually, the greater load carrying capacity of Super Vulco Ropes cuts down the number of belts required (5 Super Ropes do the work of 7 standard belts) . . . thus reducing the width of sheaves.

Sheaves with fewer grooves not only cost less, they weigh less, and take up less room—advantages that can easily improve the design and lower the overall cost.

A wealth of drive data is quickly available to you. Simply call your nearby Gates V-Belt Distributor (see 'phone book yellow pages) for a Gates V-Belt Specialist. Stocks available in industrial centers around the world. The Gates Rubber Co., Denver, Colorado—*World's Largest Maker of V-Belts.*

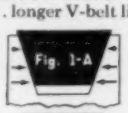
4 BIG PLUSES

✚ *Handles shock loads*

Super-strength cords provide 40% greater horsepower capacity . . . easily absorb heavy shock loads.

✚ *Wears far longer*

Concave Sidewalls (Fig. 1) increase belt life. As belt bends, concave sidewalls (U.S. Pat. No. 1813698) become straight, make uniform contact with sheave groove (Fig. 1-A). Uniform contact means less wear on sides of belt . . . longer V-belt life.



Flex-Weave cover (U. S. Pat. No. 2519590) provides greater flexibility with far less stress on fabric. Cover wears longer—increases belt life.

✚ *Provides Static Safety*

High electrical conductivity is built into Gates Super Vulco Ropes for safer drives (in explosive atmospheres).

✚ *Resists oil, heat and weather*

Special rubber compounds with which cords and fabric are impregnated make Super Vulco Ropes highly resistant to heat, oil and prolonged exposure.

TPA 76 B

Gates Super VULCO ROPE Drives

Industry Personalities

H. L. Irick

HAROLD L. IRICK has been appointed controller of the Louisville Cement Company, Louisville, Ky. In this capacity, he will be in charge of all accounts and control functions of the company and will be head of the Accounting Department.

Mr. Irick was formerly secretary-treasurer of Kingston Products of Detroit, Mich.; he had also served as comptroller of this company from 1948 to 1952. Prior to that time he was associated with the Certified Public Accountants' firm of Ernst and Ernst in Indianapolis, Ind.

JOSEPH M. ANGELO has been promoted to division manager; SIDNEY J. SMITH was moved up to gypsum products manager; and RICHARD C. CROWLE has been named insulating products manager for the Kaiser Gypsum Company's expanded Sales Division, covering northern California, northern Nevada, Utah, Wyoming, and Colorado.

Mr. Angelo, who has been northern California district sales manager since 1954, has been with Kaiser Gypsum for six years.

Mr. Smith, a veteran in the sales and merchandising of gypsum building materials, joined Kaiser Gypsum in 1947. Until recently he was assistant district sales manager of the company's northern California sales district.

Mr. Crowle also joined Kaiser Gypsum in 1947, working in sales and as administrative assistant to the vice-president and general manager for five years. He then joined Steiner Lumber Company of Sacramento, Calif., as sales manager, but rejoined Kaiser Gypsum early this year.

K. H. LYNGHEIM has been appointed advertising manager of the 20 Mule Team Products Division, U. S. Borax and Chemical Corporation, New York, N. Y.

WALTER E. LORD JR. has been named division manager and CHARLES E. WATSON gypsum products manager, in the Pacific Northwest Sales Division, covering Washington, Oregon, Idaho, western Montana, and Alaska.

Formerly a district sales manager in the company's Seattle office, Mr. Lord has been with Kaiser Gypsum for 11 years. Mr. Watson has been assistant district sales manager for the last ten months after four years of sales experience in the company's southern California sales office. He had also had experience in the building material field prior to joining Kaiser Gypsum.

Promotion of JAMES J. HAGUE, HUGH G. FERGUSON, WALTER T. SMITH, and GALEN M. THOMAS in the Sales Division of the Kaiser Gypsum Company, Inc., was announced by Colin L. Campbell, general sales manager of the firm.

Mr. Hague, formerly southern California district sales manager, has been named division manager to head up the company's sales program in southern California, southern Nevada, Arizona, New Mexico, and Texas.

Assisting Mr. Hague in this area as Gypsum product managers will be Hugh Ferguson and Walter T. Smith, both former special salesmen for Kaiser Gypsum. Smith has been assistant district sales manager during the last six months, and Mr. Ferguson has recently been a special salesman following five years of experience as credit manager for the division. Galen Thomas will become insulating board products manager. A sales representative for more than five years, Mr. Thomas returns to Kaiser Gypsum after four years as contract sales manager for Kaiser Metal Products in Bristol, Pa.

HAROLD J. LAYDEN, sales manager at the Kansas City, Mo., office of Universal Atlas Cement Company, a U. S. Steel Corporation subsidiary, died on March 12, of a heart attack in Oklahoma City, Okla.

Mr. Layden joined Universal Atlas in 1926 as a salesman at the Chicago office. In the same capacity he also served at the cement company's offices at Des Moines, Kansas City, and St. Louis. In 1945, he was made district sales manager at St. Louis, and in 1948 he was appointed sales manager at Kansas City, Mo., a capacity in which he continued to serve until his death.

Lehigh Portland Cement Plans Major Expansion To Meet Soaring Demand

Joseph S. Young, president of the Lehigh Portland Cement Company, has announced a multimillion-dollar expansion program for the company this year, with special emphasis on new facilities under construction near Miami, Fla.

Mr. Young stated that final official government figures will probably show that total U. S. cement shipments in 1956 exceeded 312,000,000 bbl., an all-time high. He anticipates that the total in 1957 will reach 334,000,000 bbl., and that when the Federal-Aid Highway program goes into high gear, production will rise to 400,000,000 bbl. by 1962.

It was indicated that Lehigh expansion expenditures during the next two years will probably reach $43,200,000, of which $32,300,000 will be spent this year. Included in plans for new and enlarged facilities are the plant to be constructed at Miami; increased capacity at Mason City, Iowa, and Union Bridge, Md., Buffalo, N. Y., and Metaline Falls, Wash.; and other projects such as replacements, renewals, and land purchases. Estimated total cost of the Miami facility is $25,000,000.

Lehigh officials decided that it would be more profitable to erect a new plant than to enlarge the present facilities at Bunnell. (3,100,000 bbl. of cement were produced at Bunnell in 1956, but this was not enough for the constantly rising demand.) Accordingly, a 3,000-acre tract was acquired seven miles west of Miami. Initial capacity of the new operation will be 2,000,000 bbl. annually; however provision will be made for future expansion. Completion of the Miami plant has been tentatively scheduled for the latter part of 1958.

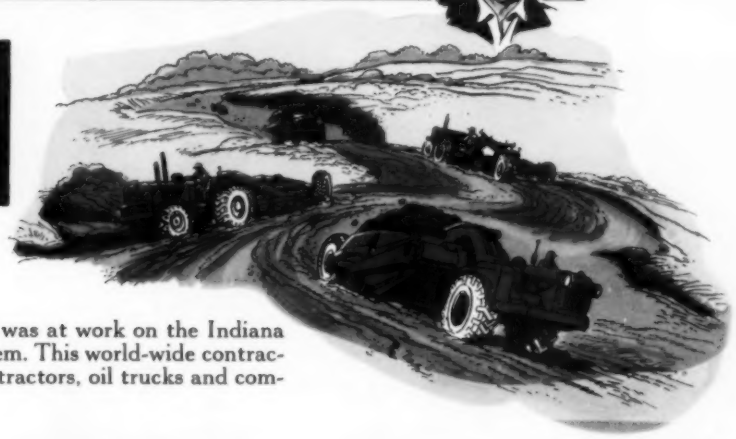
Cementos Nacionales, S. A., a Cuban firm, has constructed a $12,000,000 cement manufacturing plant near the Bay of Santiago de Cuba. The first 400-ft. kiln is in operaton, producing cement under the trade name "Titan." The plant will have a capacity of 30,000 bags of cement per day when the installation of an additional kiln is completed.

Cement production in Turkey has increased by more than 200,000 tons annually, according to the Turkish Information Office. Turkey is now capable of producing 1,230,000 tons of cement a year.

B.F.Goodrich

job inspection tour with Bill, your traveling B. F. Goodrich reporter

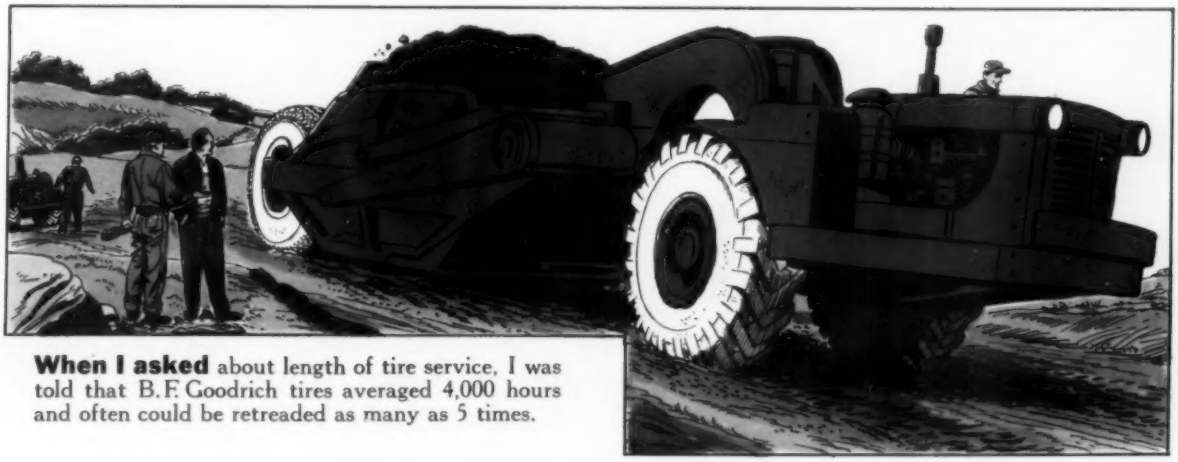
Building a turnpike



S. J. Groves & Sons Co. equipment was at work on the Indiana Turnpike near Howe the day I visited them. This world-wide contractor was using fleets of graders, scrapers, tractors, oil trucks and compactors 120 hours a week.

I found that sandy soil made the going tough for earth movers carrying 16-yard loads. But the company reported that B.F.Goodrich Super Traction tires were doing an exceptional job. Altogether, they said, they were using 7 different types of B. F. Goodrich tires.

B. F. Goodrich all-nylon tires have done a great job of reducing "down-time" to a minimum, and that means lower operating costs and increased efficiency, they reported.



When I asked about length of tire service, I was told that B.F.Goodrich tires averaged 4,000 hours and often could be retreaded as many as 5 times.

more

Hauling stone

Jernigan Trucking Co. operates 17 trucks in and around Augusta, Georgia. In addition to stone, the trucks carry 8 to 20 tons of asphalt, top soil, sand and gravel. Trucks work year 'round, says owner A. C. Jernigan, but busiest times are in the summer when temperatures go well over 100°.

Hauling stone over back-country roads for Little River bridge approaches was a problem for Jernigan. Giant loads of stone and rocky, rutted roads caused even new tires to blow out and fail within 30 days or less. After Jernigan switched to B.F.Goodrich *all-nylon* All-Purpose tires, they had no more blowouts. Competitors who did not switch continue to have trouble.

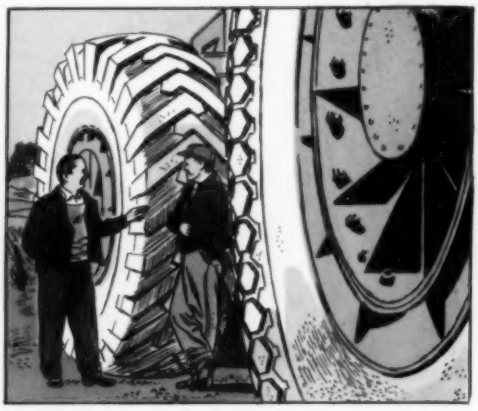
Many B.F.Goodrich *all-nylon* All-Purpose tires have gone over 50,000 miles —an all-time record on this operation.

"Tire cost is important, but we find the best tire is the cheapest in the long run," Office Manager H. B. Leonard told me. "And we get every dollar's worth out of a B.F.Goodrich *all-nylon* All-Purpose tire."

Earth moving

I found O'Connor Construction Co. tractors and 13-yard scrapers at work clearing a right-of-way in central Illinois. Tires carry a payload of over 22 tons, plus equipment weight.

O'Connor Construction Co. relies on B.F.Goodrich road service to keep its 110 *all-nylon* Super Traction and 40 Universal tires always ready for work. The tread designs are ideal for the job and give good all-around traction.



"Keeping on schedule is important on this earth-moving job," the general superintendent told me. "We're turning this old road into a 4-lane highway."

B.F.Goodrich tires work 3,000 hours on the original tread, the superintendent said, then are retreaded and give an additional 3,000 hours of service.

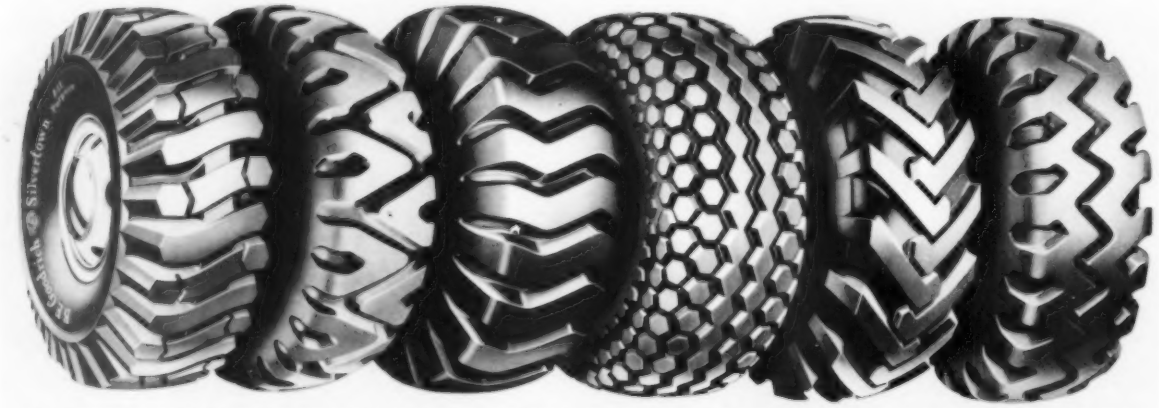
more

Whatever your job... Wherever you work...

B.F.Goodrich

road service is as close as your phone

THERE'S A B. F. GOODRICH TIRE FOR EVERY OFF-THE-ROAD JOB



All-Purpose tires work on paved or dirt roads or in the rough on such jobs as logging, sand and gravel hauling, excavating, etc. *All-nylon* or rayon construction. Sizes 6.00-16 through 12.00-24.

Universal tires are designed for power wheels on trucks and tractors that pull trailer equipment or for free-rolling wheels in severe service. *All-nylon* construction. Sizes 7.00-15 through 24.00-29.

Rock Service tires are designed for mining, quarrying and dirt-moving operations. Newest BFG tire. *All-nylon* cord body in tubeless or conventional construction. Sizes 12.00-24 to 33.5-33.

Earth Mover Traction tires are designed for free-rolling wheels on scrapers, earth-moving wagons and other pulled equipment. *All-nylon* construction. Sizes 14.00-20 to 24.00-29.

Super Traction tires work on drive or free-rolling wheels of dirt-moving rigs. *All-nylon* construction, sizes 18.00-25 to 24.00-29. **Tractor Grader** type, sizes 9.00-24 to 18.00-26.

Rock Logger tires are built for drive and front wheels on dump and logging trucks, cement mix trucks, quarry and construction machinery. *All-nylon* construction. Sizes 8.25-20 to 14.00-24.

Any one of the following B.F.Goodrich zone offices will arrange service • *Phone the one nearest you*

Atlanta, Ga.	DR 8-4561	Denver, Colo.	TA 5-1267	Memphis, Tenn.	WH 8-6761	Phoenix, Ariz.	AL 3-6168
Charlotte, N.C.	ED 4-3066	Detroit, Mich.	TY 5-8850	Minneapolis, Minn.	FE 2-5474	Pittsburgh, Penna.	HI 1-5200
Chicago, Ill.	ES 8-8800	Houston, Texas	CA 7-5228	Needham, Mass.	NE 3-5815	St. Louis, Mo.	PR 3-2600
Cincinnati, Ohio	BR 1-7800	Jacksonville, Fla.	EL 6-4167	New Orleans, La.	CA 6341	Salt Lake City, Utah	DA 2-2405
Cleveland, Ohio	PR 1-0827	Kansas City, Kan.	MA 1-4400	New York, N. Y.	OR 9-0330	San Francisco, Calif.	AT 2-9620
Dallas, Texas	RI 1-5601	Los Angeles, Calif.	RA 3-6111	Philadelphia, Penna.	JE 5-5800	Portland, Oregon	CA 3-3621

Free! Directory of B.F.Goodrich Truck Tire Distributors—nation-wide listing of the names, addresses and phone numbers of BFG distributors who offer road service—and B.F.Goodrich Truck Operators Handbook—facts and figures on BFG tires, load and inflation tables, maintenance tips, etc. Send for your FREE copies today!

B. F. Goodrich Tire Co.
A Division of The B. F. Goodrich Co.
500 S. Main Street, Akron 18, Ohio

Please send me a FREE copy of:

☐ Directory of B. F. Goodrich Truck Tire Distributors
☐ B. F. Goodrich Truck Operators Handbook

Name_____

Company _____

Address _____

City_____ Zone_____ State_____

Specify B. F. Goodrich tires when ordering new equipment

B.F.Goodrich
FIRST IN RUBBER

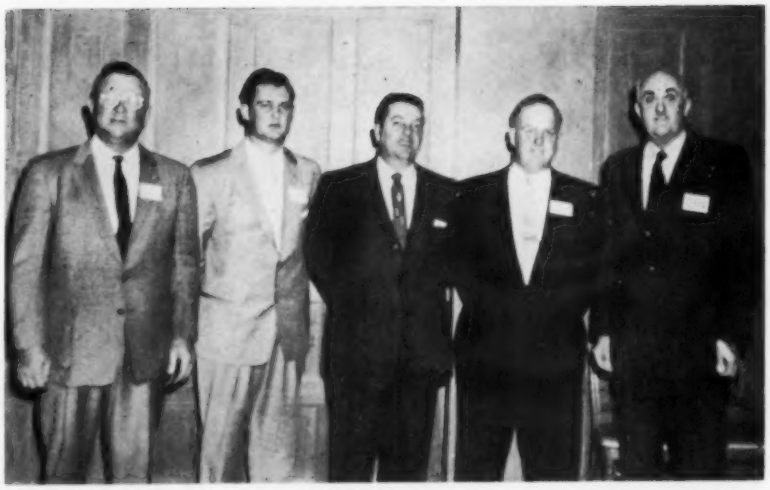
Your B. F. Goodrich dealer is listed under Tires in the Yellow Pages of your phone book

Minn. Aglime Producers Discuss ACP, Promotion At 9th Annual Meeting

On February 14 and 15, the ninth annual convention of the Minnesota Agricultural Lime Producers Association was held in Minneapolis at the Dyckman Hotel. Among the speakers for the meeting were ACP and University of Minneapolis representatives, and Robert M. Koch, president and general manager of the National Agricultural Limestone Institute, Inc.

Following his report on recent developments in Washington concerning the Soil Bank and ACP, as they have an affect on the consumption of agricultural limestone, Mr. Koch led a general discussion on the specific problems of individual producers in marketing this commodity.

Merle Avery, ACP official in charge of administering that program in Minnesota, reported on the agency's efforts and participated in the ensuing question-and-answer period. Discussion of the state's agricultural limestone needs and a report on research activity at the university were presented by Dr. A. C. Caldwell and Dr. John Grava of the University of Minnesota faculty.



This group of officers of the Minnesota Agricultural Lime Producers Association includes (l. to r.): Henry Pederson, Pederson Bros., director; Dean Gaulke, Patterson Quarries, secretary-treasurer; Donald Stussy, Stussy Construction Co., president; Lee Osmundson, Osmundson Brothers, vice-president; and Charles Bryan, Bryan Rock Products, Inc., director.

During the convention, the following officers were elected for the coming year: president, Donald Stussy, Stussy Construction Co., Mantorville; vice-president, Lee Osmundson, Osmundson Brothers, Adams; secretary-treasurer, Dean Gaulke, Patterson Quarries, St. Charles; directors are Charles Bryan, Bryan Rock Products, Inc., Shakopee; Henry Pederson, Pederson Bros., Harmony; and Virgil Smith, Heintz & Smith, Caledonia.

Election Results Announced For S.W. Portland Cement

M. A. Koffman has been elected senior vice-president of the Southwestern Portland Cement Company, Los Angeles, Calif. Mr. Koffman has been with the firm since 1907.

Other elections announced by George E. Warren, president, are as follows: Robert H. Fielding, vice-president and treasurer; Felix S. McGinnis Jr., vice-president and secretary; William C. Brophy, vice-president, marketing; F. T. Sheets Jr., vice-president, manufacturing.

Directors of the firm also announced the retirement of Theodore K. Partridge, vice-president in charge of sales, and W. R. Blair, vice-president and manager at El Paso. Mr. Patridge will remain a member of the board.

Rogers Named President At 38th A.G.C.A. Meeting

Lester C. Rogers, president of Bates & Rogers Construction Corporation of Chicago, a heavy engineering construction firm, was installed as president of The Associated General Contractors of America for 1957 at the closing session of the 38th annual convention of A.G.C. in Washington, D. C.

Fred W. Heldenfels Jr., Heldenfels Brothers, Corpus Christi, Tex., a highway contracting firm, is the new vice-president. William Muirhead, Muirhead Construction Company, Durham, N. C., was re-elected secretary-treasurer at a post-convention meeting of the governing board.

National Potash Company Formed by Freeport Sulphur

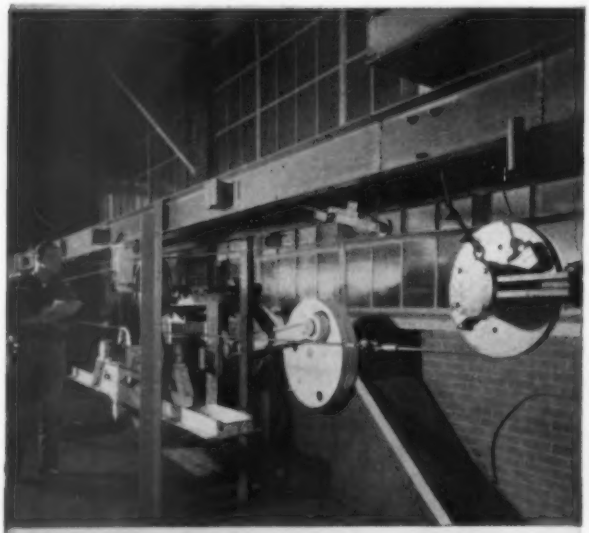
The Freeport Sulphur Company's new potash project, located near Carlsbad, N. M., has recently gone into production. In undertaking the project, the company formed the National Potash Company, in conjunction with the Pittsburgh Consolidated Coal Company.

Facilities include two 1,800-ft. shafts, said to be the deepest in the industry, a 21-mile water pipeline, and product storage buildings which have a capacity of more than 100,000 tons.

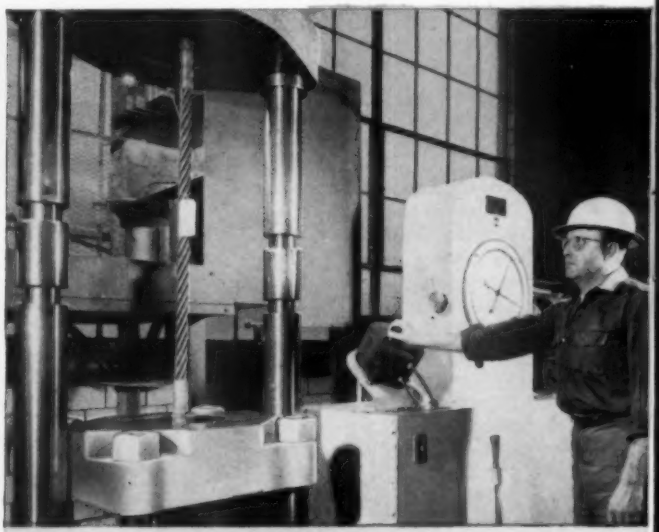
After two years of litigation, Everglades Fertilizer Company of Florida, which in 1954 purchased a filling machine from the Kraft Bag Corporation, was granted a motion for summary judgment declaring the patent of the plaintiff, Inglett & Corley, Inc., of Georgia invalid by virtue of prior public use. The Georgia manufacturer had sued Everglades, claiming patent infringement.

• Grand Rapids Gravel Company, Grand Rapids, Mich., employs this Michigan tractor-shovel for its extensive maintenance work. The unit is frequently used to switch buckets on its cranes, to load the worn bucket and move it to the firm's repair shop, where new teeth are welded or a hard surface is attached with a welding rod.

Why J&L wire rope service life



Fatigue machine. This 6 x 25 I.P.S. fiber core rope is being subjected to a continuous fatigue test to determine the number of reversed bends before breakage.



Cross-section tension test. This 1¼" 6 x 41 I.P.S.-RL fiber core rope was tested to 140,000 lbs. tensile load. Catalog requirement for same rope is only 123,000.

Vibration fatigue test subjects this boom pendant assembly to repeated shock loading. The 2,500 ft. lb. load provides action simulating actual field conditions.

Tension test of individual wires shows pounds of tensile load withstood before breaking. Every coil of wire used in J&L wire rope is thoroughly tested before acceptance.

salesmen can talk with confidence

To users and buyers of wire rope, safety and long rope life are all-important considerations. When you specify J&L, you can be confident you are buying wire rope that will stand up to the job for which it is made.

Every strand of J&L wire, every finished wire rope, is subjected to exacting tests to determine maximum factors of strength, flexibility, abrasion and corrosion resistance. This quality control is a most important operation in the production of J&L wire rope. Shown here are some of the tests that enable your J&L wire rope salesman to talk about quality with confidence.

The next time you buy wire rope, call your nearby J&L representative, or write direct to the Jones & Laughlin Steel Corporation, Wire Rope Division, Muncy, Pennsylvania.

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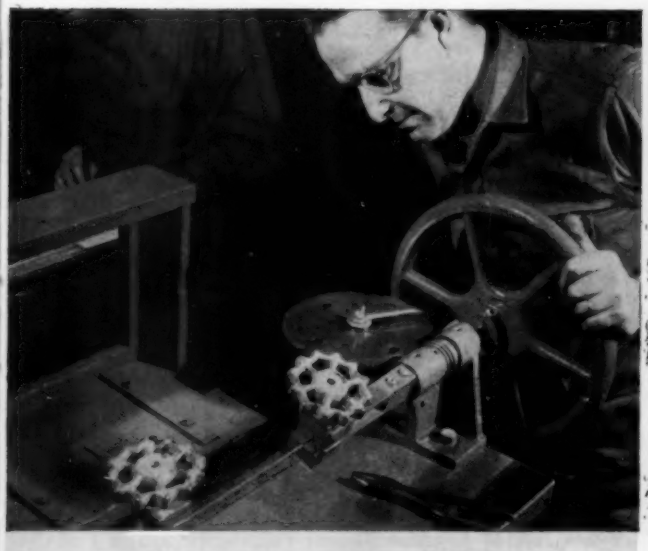
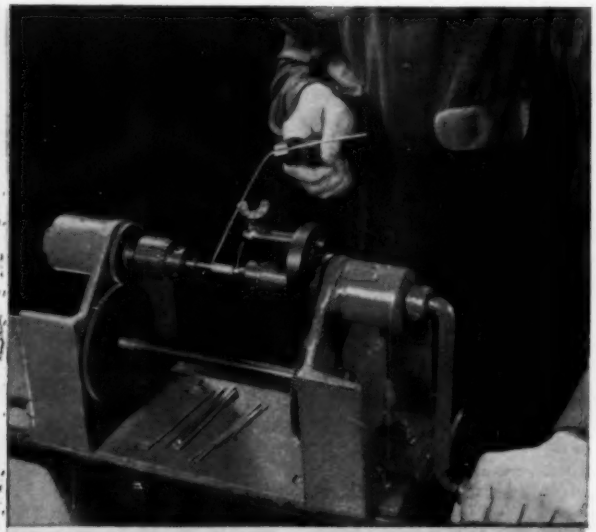


Torsion machine tests ductility by twisting wire. This 8" length of .081 wire took 41 revolutions before snapping. Federal standards require only 26 revolutions.



Wrap test. Galvanized wire is wound eight times around a mandrel of its own diameter and then unwrapped, proving ductility of wire and the bond of the coating.

(Protective screens removed during photography.)

Among the producers at the convention were (l. to r.): Michael Brisch, Rockwell Lime Co., director; Lester A. Helgeson, Janesville, past-president; W. A. Canary, Footville Lime & Rock Co., president-elect; and Ervin Ellefson, Ellefson Bros., secretary-treasurer.

Discuss A.C.P. Regulations During Annual Gathering Of Wisconsin Aglime Assn.

The annual meeting of the Wisconsin Aglime Producers Association at the Park Hotel, Madison, Wis., on February 13 was attended by about 30 producers and distributors of this commodity from all parts of the state.

During the session, the following members were elected to association posts for the current year: president, W. A. Canary, Footville Lime & Rock Co., Footville, Wis.; vice-president, Roger Ivey, Ivey Crushing and Construction Co., Mineral Point; and secretary-treasurer, Ervin Ellefson, Elliefson Bros., Viroqua. Directors-elect included: Michael Brisch, Rockwell Lime Co., Manitowoc; Stanley Buye, Arthur Overgaard Co., Elroy; and Walter Wendt, Dann and Wendt Lime Works, Rio.

A major topic of discussion concerned the efforts of the group to obtain modification in ACP regulations which, in the opinion of the industry, have retarded the use of agricultural limestone. In view of the inadequate progress made by an association committee in meetings with the state ASC committee and university officials last year, it was decided to have another group representing the association continue these efforts.

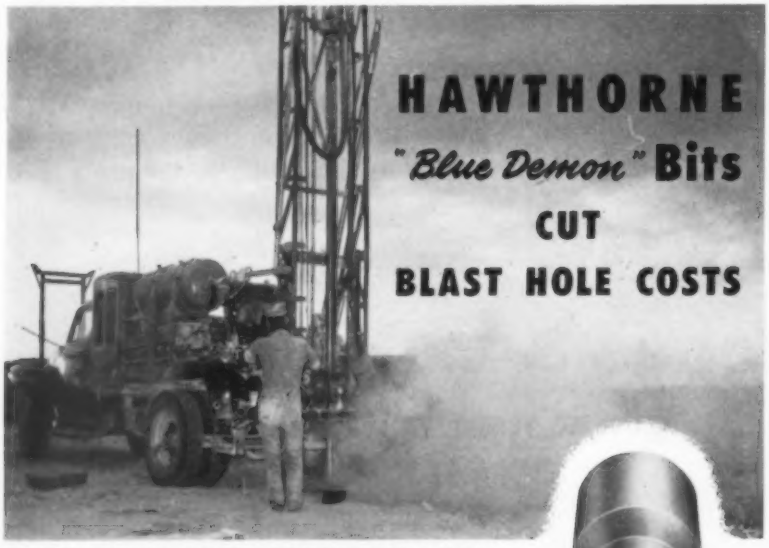
It was reported that a committee consisting of president-elect William Canary, director Stanley Buye, and Robert M. Koch of the National Agricultural Limestone Institute met with Governor Vernon Thomson to discuss the industry's viewpoint and solutions for these problems.

Lake Vessels to Be Renamed By Michigan Limestone Div.

Renaming ceremonies are scheduled this spring for two self-unloading vessels of the Bradley Transportation Line, operated by the Michigan Limestone Division of the United States Steel Corporation.

The *B. H. Taylor* will be rechristened the *Rogers City* in honor of the "limestone capital of the world," and the *A. F. Harvey* will become the *Cedarville*. Both towns are in Michigan, and Cedarville is the site of the division's newest dolomite limestone quarry.

The *Taylor*, built in 1923, has a keel length of 530 ft. The *Harvey*, now being converted to a self-unloader at Bay City, Mich., was built in 1927, and has a length of 580 ft. Rogers City is the home port of the nine vessels of the Bradley fleet.



SERIES "700" WITH BREAK-OUT LUGS SIZES 3⅞"-5⅝" FOR HEAVY DUTY ROTARY AIR DRILLING CUTS HOLE TIME

Rotary air drilling, with Hawthorne "Blue Demon" Series "700" Carbide Insert Bits, has been increasing drilling speeds up to 50%, with progressively decreasing drilling cost per ton.

The Series "700", using carbide inserted replaceable blades, was designed for hard rock exploration air drilling on the Edwards Plateau and has proved equally successful in quarry type drilling in medium-hard and softer limestone and sandstone.

Many areas previously requiring more expensive roller bits are now successfully using Hawthorne "Blue Demon" Bits.

Break-out lugs facilitate rapid replacement of expendable worn blades, since quarry drilling requires frequent bit change.

Hawthorne's experience and reputation in efficient bit design and manufacturing quality in the field of resources exploration is now available to the blast hole drilling industry.

In average quarry drilling, you should check the possibilities of Hawthorne "Blue Demon" Carbide Bits for increased drilling efficiency.

Write TODAY for your FREE copy of "Blue Demon" Bit Catalog 656 which fully describes and prices the complete line of Hawthorne Bits in sizes from 1⅞" through 13", and for recommendations for your specific drill.

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Cement Testing, Research Covered in New Booklet Published by Cembureau

As the second in the series "Cembureau Papers," a 57-page booklet entitled *On the Testing of Cement* has been published by Cembureau, The Cement Statistical and Technical Association, Malmo, Sweden.

The booklet summarizes the findings of a "working party" on cement standards appointed by Cembureau in 1949 to study the international cement specifications with the ultimate aim of promoting uniformity in test methods. Members of the working party represent 12 nations.

Extensive laboratory work carried out by members of the group has been devoted to a study of methods for carrying out strength tests, as well as the investigation of other properties. The report gives information on what has been agreed upon or the position of the work still in progress.

One section is devoted to the definition of various kinds of cement, and a discussion of the chemical composition of cement, its durability, setting time, fineness, and strength. The last part of the book contains a comparison of test results obtained with different standards or specifications; a list of over 100 reports which the members of the working party have prepared and submitted; and a discussion of the method for testing the strength of cement, prepared as an international standard.

The new test method is a joint proposal of Cembureau's working party and the Reunion Internationale des Laboratoires d'Essais et de Recherches sur les Materiaux et les Constructions. Cembureau is also co-operating with a special committee appointed by the International Organization for Standardization (I.S.O.). The method, already accepted as a standard test by the Netherlands and Portugal, has now been submitted to the I.S.O. for approval.

Price of the booklet, bound in a stainless cover, is $1.40 per copy. It can be obtained from Cembureau, Box 245, Malmo, Sweden.

The Warner Company, Philadelphia, Pa., has purchased W. E. Johnson, Inc., Paoli, Pa., according to an announcement made by John Curtin Jr., Warner president.

The Lehigh Materials Company, Tamaqua, Pa., has also been sold to the Warner Company. Lehigh produces Lelite, a lightweight aggregate.

• Those attending the recent Los Angeles convention of the National Sand and Gravel Association were attracted by this Insley WP clamshell crane at work at Consolidated Rock Products Company's Irwindale plant. Visitors were taken on a plant tour on the final day of the meeting. Mounted on Maxi self-propelled, pneumatic-tired carriers, these units handle aggregates in stockpile and load trucks.

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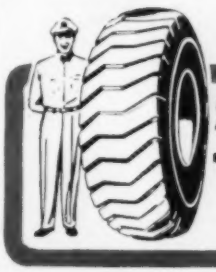

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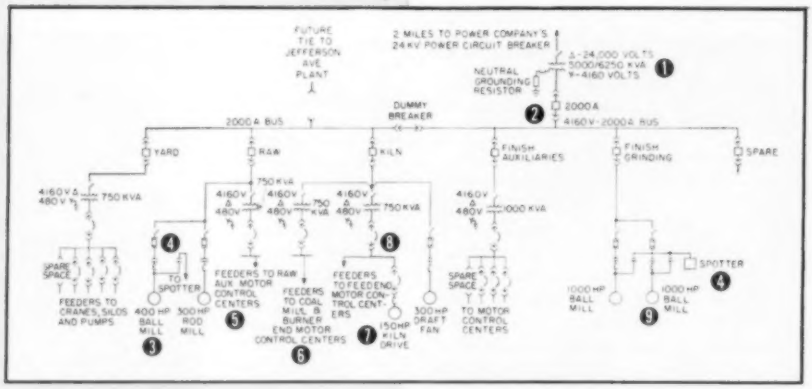
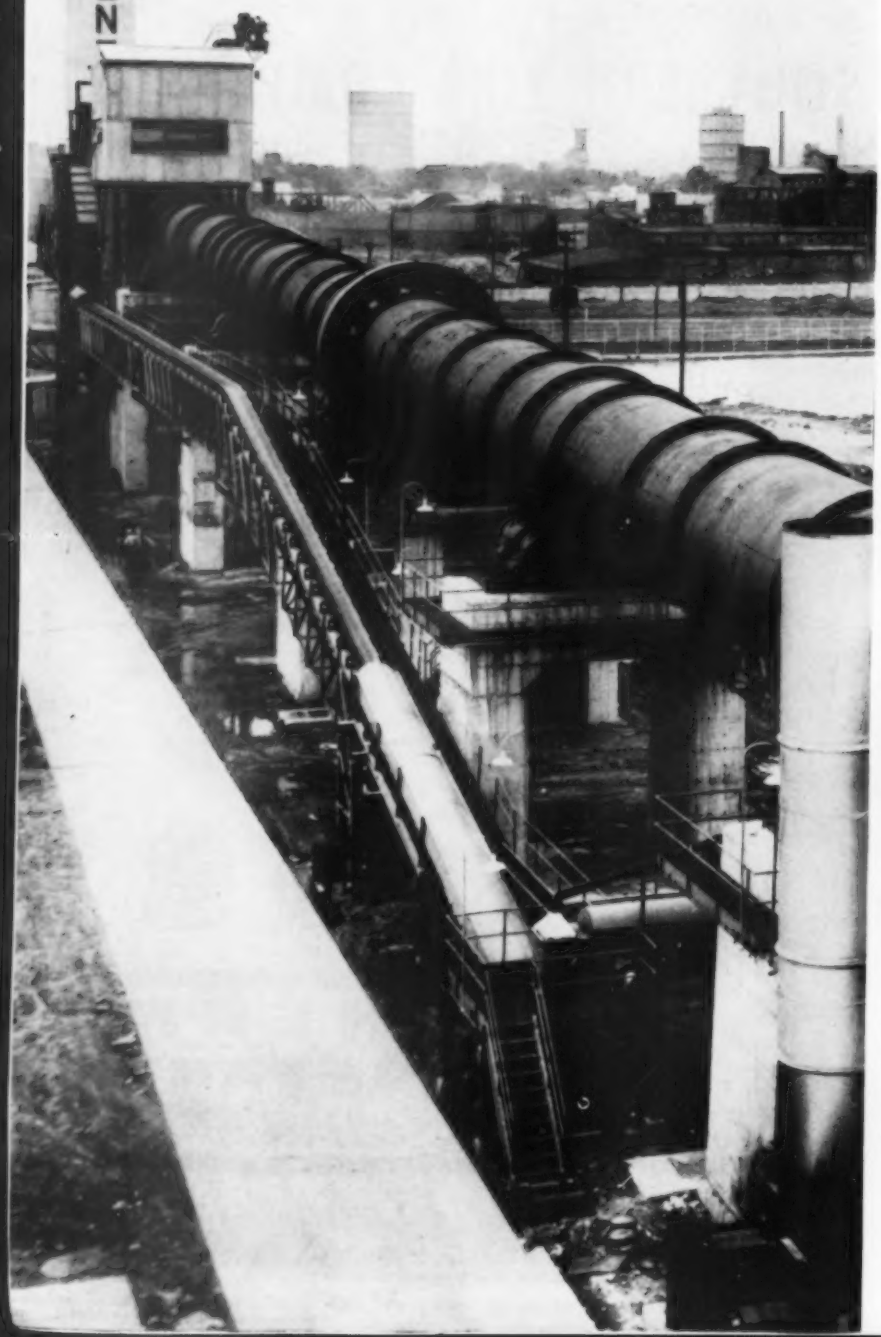
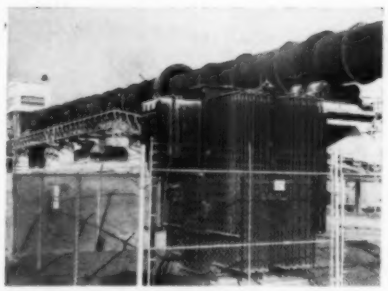
ENGINEERING REPORTS:



SYSTEM PARTICIPATION of G.E. in Peerless plant is shown by one-line diagram, keyed to photos. According to Peerless, start-up time for new equipment was one-third of original estimate due to on-time delivery by G.E. and other companies.



General Electric flexible power

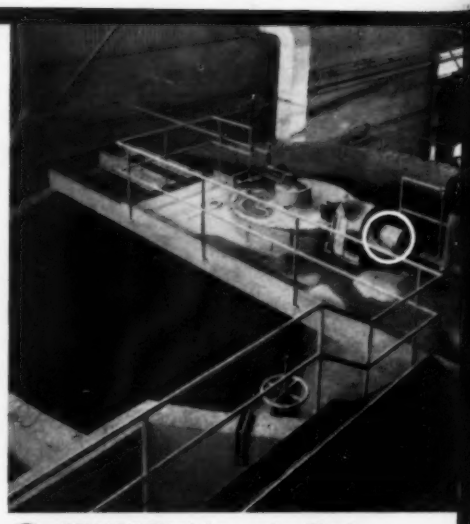


1 ELIMINATION of transient overvoltages (except those caused by lightning) is provided by neutral grounding of G-E 5000-kva main transformer.

2 QUICK ISOLATION and location of electrical faults is made easier by G-E metal-clad switchgear, arranged with feeders for each plant department.

3 **HIGH TORQUE** 400-hp G-E synchronous motor drives ball mill in raw department. Positioning is controlled by G-E Limitamp* starter and spotter.
*Registered trade-mark of General Electric Co.

4 **ACCURATE CONTROL** and spotting of raw and finish mills, plus safer isolation of low voltage equipment, is provided by these G-E Limitamp controllers.



5 **RELIABILITY** of clay wash mill agitator, and other continuous operation auxiliaries, is increased by General Electric Tri-Clad* '55' induction motor.
*Registered trade-mark of General Electric Co.

engineering, equipment provide system at new Peerless plant

Peerless Cement Corp. recently completed its second Detroit area installation —the $7½-million Brennan Avenue plant. The plant, which produces 1,250,000 barrels per year, has increased Peerless' overall production by 25%.

In this important expansion project, General Electric system engineers worked with Peerless engineers and their consultants, Giffels and Vallet Inc., L. Rosetti, in planning the primary distribution system. A provision was made for possible future addition of two kilns to increase production to 3,750,000 barrels annually. General Electric engineers also helped determine the proper voltage, starting requirements for ball mill motors, and provisions for a future tie with Peerless' nearby plant on Jefferson Avenue.

Contributions of General Electric engineers, coupled with latest G-E equipment, helped Peerless build a flexible electrical system with provisions for future expansion.

Whatever your electrical needs, General Electric engineers and equipment can work for you. Contact your nearest G-E Apparatus Sales Office or write for Bulletin GEA-5984. General Electric Co., Sect. 658-19, Schenectady, New York.

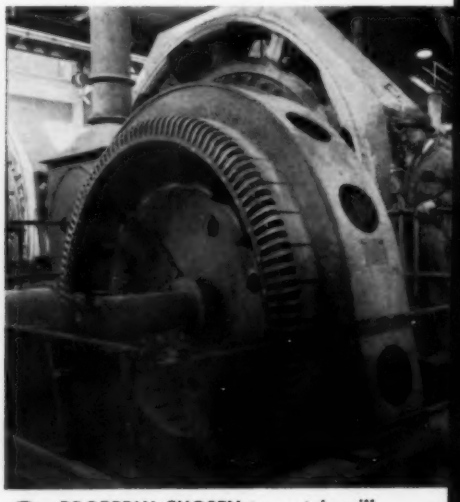
6 **STURDY,** totally-enclosed fan-cooled G-E 250-hp Tri-Clad induction motor drives the tough-duty coal mill in the Brennan Ave. plant kiln department.

Engineered Electrical Systems for the Rock Products Industry

GENERAL ELECTRIC

7 **PROTECTED** against weather, this totally-enclosed, wound-rotor induction motor provides drive for rotation of 11½ by 425-foot kiln—Michigan's largest.

8 **LIFE EXPECTANCY** of 440-volt equipment is increased by solidly grounding neutrals for this 1000-kva load center, one of five that serve plant.



9 **PROPERLY CHOSEN** to match mill starting torque needs to supply system stiffness, this G-E 1000-hp, 240-rpm synchronous motor drives finish mill.

Trap Rock Orders 50 Barges At Cost of $4,000,000

New York Trap Rock Corporation has awarded a contract to the Richmond (Va.) Steel Company, Inc., for the construction of 50 steel deck cargo barges at a total cost of nearly $4,000,000, according to an announcement released by Wilson P. Foss III, Trap Rock president. With these additions, the company's fleet of deck barges will number 260—the largest of its kind in the world.

"The fast-growing need for crushed stone," Mr. Foss said, "has made it urgent that New York Trap Rock acquire additional carriers for its products. The mineral aggregates industry, which now ranks first in tonnage among the nation's basic industries, will have even greater demands placed on its productive capacity by the Federal Aid Highway Program and other major construction projects. . . ." The 50 new vessels are to be delivered over a three-year period, with 14 scheduled for completion in 1957.

Barges have been for many years the principal means for transporting crushed stone from the company's three plants on the Hudson to suppliers and contractors throughout the area. As the leading producer of crushed stone for the New York-Long Island-New Jersey area, New York Trap Rock shipped more than 6,250,000 tons by barge last year. Shipping men have estimated that Trap Rock barges account for nearly one-third of all the traffic moving on the Hudson River north of the George Washington Bridge. Last year's production total would fill a line of barges, if they were placed end to end, reaching from New York City to Albany—136 miles.

George Smith, the company's marine superintendent, who is in charge of its Newburgh shipyard, said that the barges to be built by Richmond Steel would be 120 ft. long, 38 ft. wide and draw a little more than 11 ft. of water when loaded. Carrying capacity of each will be 1,350 tons. Provision has been made in the contract to permit Trap Rock to modify the design if towing tests to be conducted during the next few months indicate the desirability of push-type towing on the Hudson River.

Acquisition of the new barges will result in the addition of 50 men to the Trap Rock payroll. Each barge in the fleet is manned almost full time by what the trade calls "scow captains." These men, many of whom have spent their lives sailing the high seas, live aboard the barges.

Scow captains have figured prominently in a number of recent newspaper, radio, and television stories which described how they are paid by helicopter. Trap Rock's flying paymaster makes his twice-monthly rounds in the company's helicopter, which at times lands on loaded barges in moving tows as they proceed to their destinations.

Two of New York Trap Rock Corporation's present barges, with the New York skyline in the background. Each of these barges has a top capacity of 1,200 tons.

John Prince

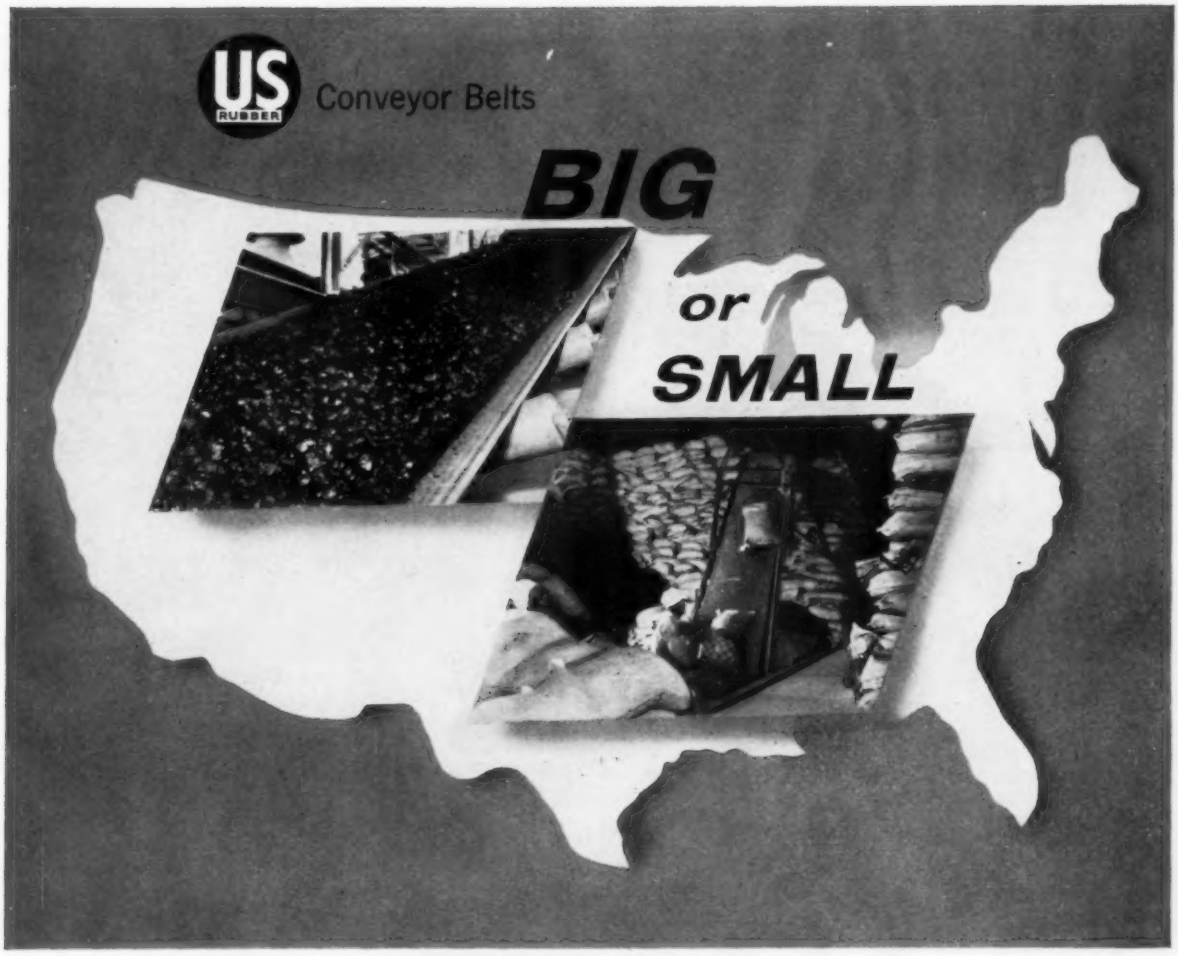
Death of John Prince, 80, Ends Distinguished Career In Industry, Civic Service

News of the death of John Prince, 80, chairman of the board of the Stewart Sand and Material Company, Kansas City, Mo., brought sincere regret to his associates in the industry. Mr. Prince died on March 8 in a Kansas City hospital.

A native of Vineland, N. Y., Mr. Prince moved to Kansas City in 1906 as an engineer, to work on the construction of the plant of what is now the Missouri Portland Cement Company at Cement City. He became president of the Stewart Sand and Material Company in 1910 and board chairman in 1953. For several years he served as chairman of the board of the Consumers Crushed Stone Company, and as president of the successor firm, the Pixley Development Company, which was organized to develop an underground storage facility from a worked-out quarry near Independence, Mo.

Mr. Prince was president of the National Sand and Gravel Association in 1924-25, and was one of the pioneer members who promoted the growth and success of that organization. He also served as president of the Engineers Club of Kansas City and the safety council of that city.

In the 1930's he was a member of the Mineral Aggregate Section of the National Recovery Administration (NRA) code authority. He was a promoter of the movement urging the use of the Missouri River as a means of carrying freight. In his community he served with distinction in many civic causes.



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425 E. Hill St.

Omaha 3, Neb.
4469 Farnam Street

Philadelphia 6, Pa.
5th and Locust Streets

Pittsburgh 12, Pa.
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630 N. W. 10th Avenue

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US RUBBER

Mechanical Goods Division

United States Rubber

Newest Marquette Facility To Produce Cement at Rate Of 1,250,000 Bbl. per Year

At Cape Girardeau, Mo., the first clinker was turned out at the new plant of the Marquette Cement Manufacturing Company, which was completed recently at a cost of $7,000,000. Unless unforeseen complications arise, the new installation will soon be producing cement at the rate of 1,250,000 bbl. annually. Kaiser Engineers, who had the contract for erecting the facility, still have the job of completing the transport line carrying cement to the river silos.

The 450-ft. kiln and other major items of equipment were given trial runs before the actual full-scale production of cement was begun. The newly completed structures were erected adjacent to the original plant.

Construction of a $50,000 plant at Escondido, Calif., for the newly-formed Escondido Rock and Sand Company has been announced by the owners, Otto F. Einer and James L. Mains. The plant includes equipment for dragging, washing, and screening sand, in addition to bulldozers and a fleet of four trucks.

Tractor-Mounted Heavy Duty Loaders for Materials Handling

1 Lifts over 2,000 lb. to full height in less than 7 sec.
2 Built-for-strength tubular steel frame also acts as hydraulic oil reservoir.
3 Trunnion mounted bucket rams won't spring—EVER!
4 Easy access for operator adds to working speed. Full safety protection, too.
A point of SUPERIORity
New pivot position in low-silhouette design gives the Superior loader a 10 ft. 10 in. lift. At the same time the reach—the distance from the front of the loader frame to the edge of the dumped bucket—is a generous 2 ft. 8 in.
SUPERIOR

Extra-quick Superior lift action, with front-mounted Vickers pump. Massive (8,900 lb.) pry-out strength for handling heavy or frozen materials. ▯-section steel loader arms for rigid strength. Hydraulic piping inclosed in arms for protection. Bucket capacities up to ½ cu. yd. Crane booms, snow-coal and specialty buckets available. Superior loaders can do a variety of materials-handling jobs around your plant, and release more costly equipment for specialized use. Fits most industrial tractors. Write for full performance details.

SUPERIOR EQUIPMENT DIVISION, P.O. Box 341, Wheeling 8, Ill.

Huron Portland Cement Marks 50th Anniversary—Shows Achievement Exhibit

A half-century of progress has been achieved by the Huron Portland Cement Company, Detroit, Mich., which is celebrating its golden anniversary this year. Founded in January, 1907, by John B. Ford, Stanford T. Crapo, Emory L. Ford, George R. Ford, B. F. Berry, Harry J. Paxton, and George B. Morley, the company is now one of the nation's leading producers of portland cement.

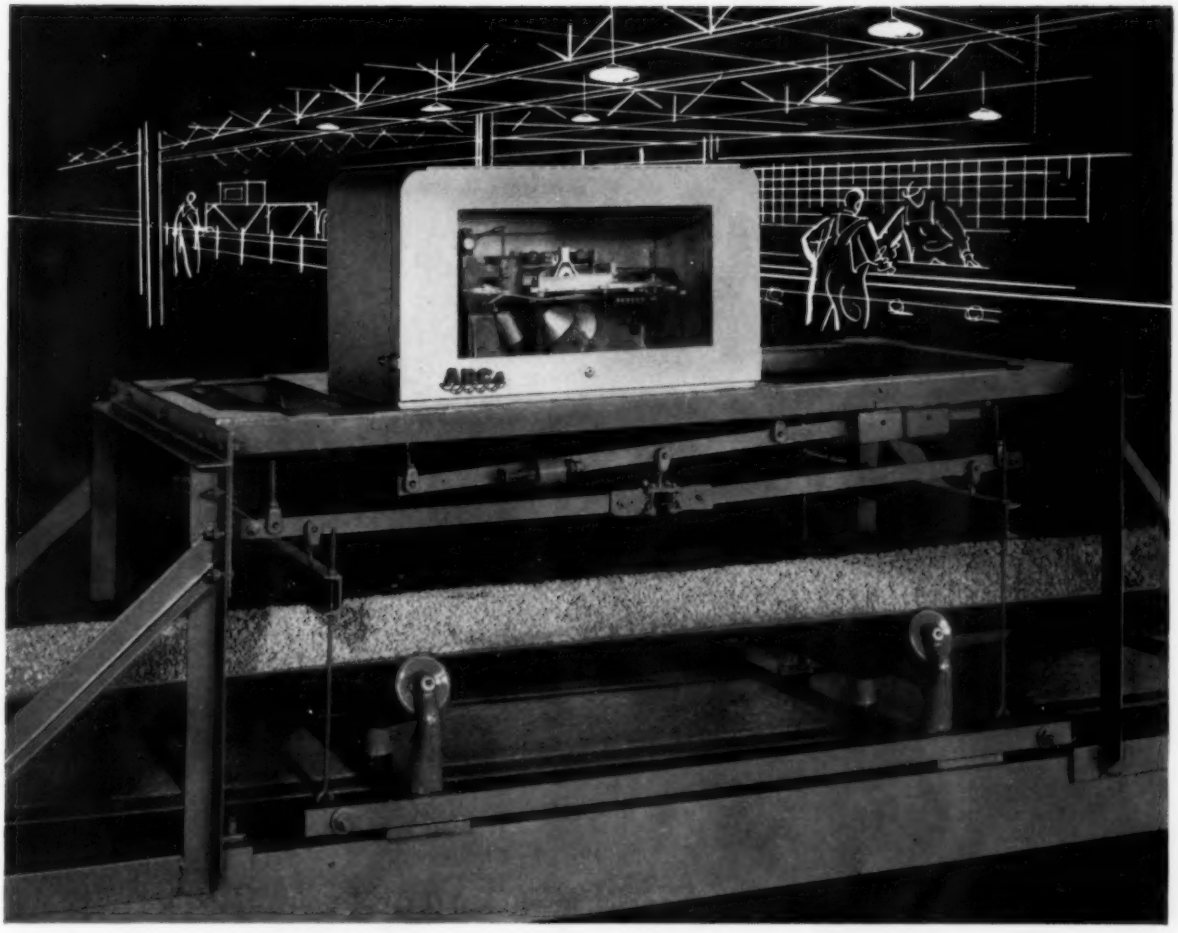
In 1956 24 kilns produced more than 25,000 bbl. of cement a day at Huron's Alpena mill, said to be the largest single cement plant in the world. This year two new large kilns, equipped with preheaters, are going into production, to make a substantial addition to the company's capacity.

In 1915 Huron instituted a method of shipping cement in bulk from its main plant at Alpena to its processing and distribution plants throughout the Great Lakes region. Today Huron ships its products from Alpena with its own fleet of six vessels to Detroit, Duluth, Cleveland, Buffalo, Toledo, Saginaw, Oswego, Muskegon, Milwaukee, Green Bay, and Superior. A new plant is now being designed for construction at St. Joseph, Mich.

On January 8 in the Industrial Hall of the Detroit Historical Society Emory M. Ford, chairman of the board of directors, cut the ribbon which opened an exhibit called "Fifty Years of Concrete Achievement." The exhibit, constructed so that it can be transported in sections to exhibition halls, takes the viewer on a pictorial history of cement from the days of the pharaohs of Egypt to the present time; it also includes a forecast of the future showing modernistic structures.

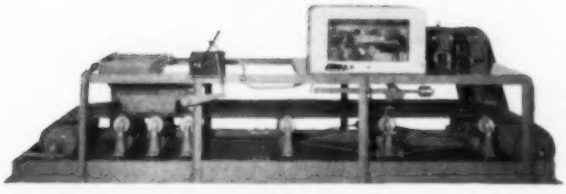
Preliminary steps have been taken for the establishment of a 1,000-t.p.h. capacity cement plant near Bhilai in Southeast Madhya Pradesh Land, India. The plant will produce cement by the dry process as a by-product of the production of steel. This will be the second factory of its kind in India.

Ralph Rogers & Company, Inc., Bloomington, Ind., has leased 160 acres of land at Oak Ridge, Tenn., from the Atomic Energy Commission for the operation of a limestone quarry.



Accurate Blending Conveyor Scales and Feeders

...successor to TRANSPORTOMETER



An ABCs feeder with a power-operated regulating gate for feeding material at preset rates.

Now completely redesigned by McDowell engineers after exhaustive field and laboratory tests, ABCs equipment embodies those features users want most: simplicity of design; rugged construction; dependable operation; greater accuracy. ABCs belt scales and feeders are also engineered as complete control systems for the most challenging problems in feeding, weighing, blending, and totalizing of free flowing bulk materials.

V.C. Doversberger welcomes inquiries.

ABCs®

7476-ABC

CONVEYOR SCALES AND FEEDERS

ABCs SCALE DIVISION
McDOWELL COMPANY, INC.
16350 Waterloo Road • Cleveland 10, Ohio

Now, a stronger thread for bags—at low cost!

BAGS SEWN WITH "SUPER CORDURA" withstand rugged handling, reducing spillage sharply.

"SUPER CORDURA" permits use of smaller needles, preventing material loss due to sifting.

SAVE TWO WAYS WITH NEW DU PONT "SUPER CORDURA"

REG. U. S. PAT. OFF.

High Tenacity Rayon

- **Bags sewn with it cost less**
- **Cuts cost of closing operation**

Du Pont "Super Cordura"* gives you greater seam strength—yet bags sewn with it cost you less. Drop tests prove this strength minimizes the danger of seam breakage.

"Super Cordura" saves you money in your own closing operations, too. It lets you use one size thread for most jobs, meaning reduced thread inventory. And it's treated with a special finish to insure good sewability.

Consider the advantages of bags sewn with Du Pont "Super Cordura" the next time you order multiwalls . . . and order it for use in closing, too.

E. I. du Pont de Nemours & Co. (Inc.), Textile Fibers Department, Wilmington 98, Delaware.

**"Super Cordura" is Du Pont's registered trademark for its high tenacity rayon yarns.*

DU PONT

REG. U. S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

THREAD OF "SUPER CORDURA"... easier to sew ... costs less than conventional thread . . . extra-strong

Road Materials Suppliers Of Pennsylvania Discuss Problems at Conference

More than 400 producers, material suppliers, and guests were in attendance at the annual banquet and business meeting of the Pennsylvania Highway Material Producers Conference, which were held on January 24 and 25, respectively, at the Hotel Penn-Harris, Harrisburg, Pa. This program followed the annual meeting of the Pennsylvania Stone Producers Association, which was also held at this location, and whose members are active supporters or members of the highway materials group.

Guest speakers at the conference included the Hon. Nolan F. Ziegler, mayor of Harrisburg; Pennsylvania's Lt. Governor, Roy H. Furman; Robert A. Farley, chief engineer, state department of highways; John L. Stinson, district engineer, U. S. Bureau of Public Roads; and Carlyle Gray, state geologist.

The majority of comments by the speakers concerned the effect of the expanded highway program as it affects segments of highway construction in Pennsylvania. It was reported that during 1956 over $102,000,000 worth of construction work was placed under contract, and that a fifth of that amount has already been awarded thus far this year.

With respect to the federal-aid program, the 1957 allotment was stated to be $101,700,000, of which $62,700,000 is interstate system money; and with matching funds, the amount available for highway construction will be approximately $138,000,000.

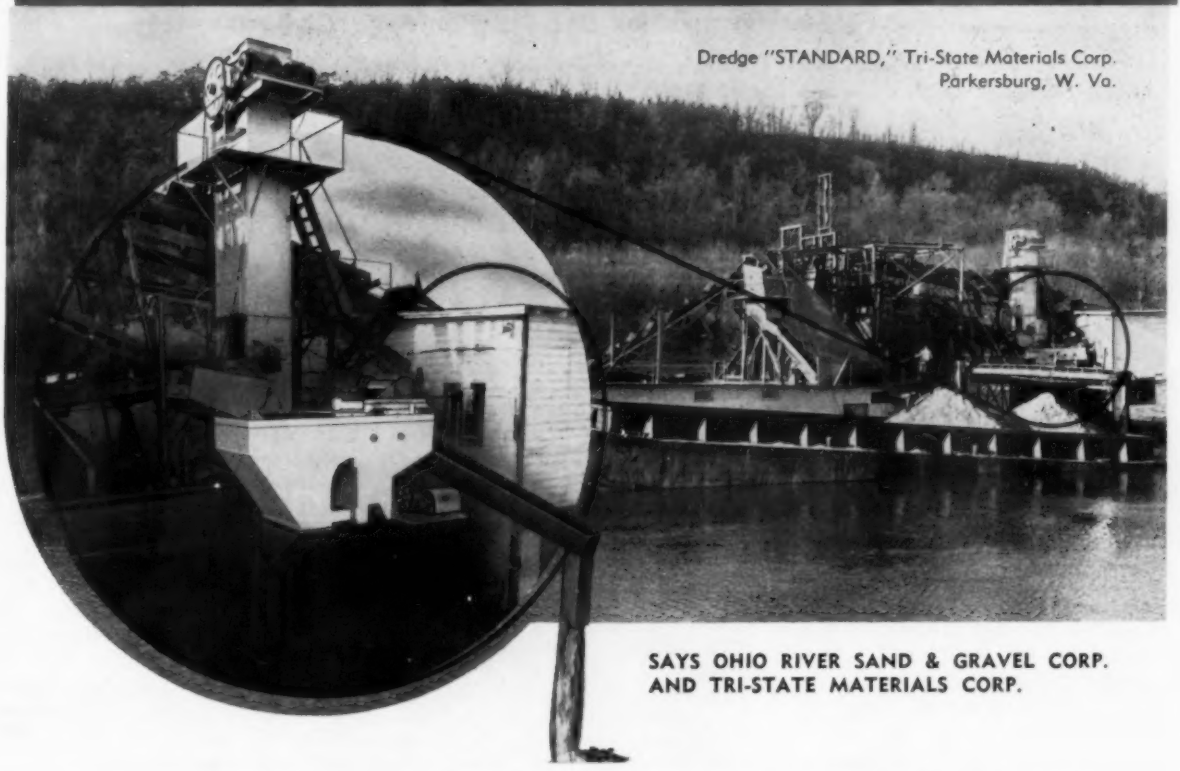
Pennsylvania, it was pointed out, is one of the four larger states involved in the program. Highway construction effort in the state is therefore considered a potentially significant factor when Congress undertakes the authorized periodic revaluation of the highway program.

1956 Natl. Gypsum Sales Pass $151,000,000 Mark

The National Gypsum Company, Buffalo, N. Y., set a new sales record in 1956 of $151,859,497, an increase of $3,640,000 over the 1955 sales figure.

Mr. Baker stated that earnings per share decreased from $4.61 in 1955 to $3.61 last year, due to start-up costs on five new plants. National Gypsum's assets for 1956 amounted to $171,254,649, compared with $148,074,466 in 1955.

"...The most efficient gravel washer and trash separator yet developed"



Dredge "STANDARD," Tri-State Materials Corp.
Parkersburg, W. Va.

SAYS OHIO RIVER SAND & GRAVEL CORP. AND TRI-STATE MATERIALS CORP.

The OPERATING PERSONNEL & MANAGEMENT state:

"In our opinion, yours is the most efficient gravel washer and trash separator yet developed.

"Requires a minimum of space for installation, maintenance and operation, with the lowest maintenance and operating costs yet.

"Handles our maximum production, regardless of size, with ease."

This scientifically engineered washer can save your Company money, too. Efficiency and low cost join to give profitable production.

This FUEL PROCESS product can readily be installed on your dredge. Our engineers are available to assist you in every possible way. Write for full details so that you can benefit by greater efficiency and lower production costs.

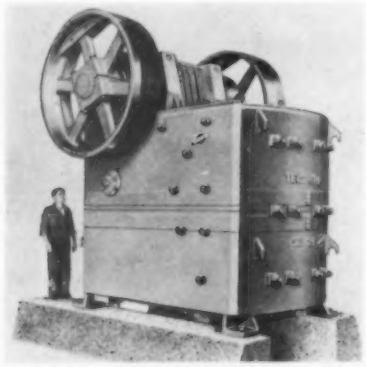
For most installations this unit washes out trash, coal and other extraneous material with water as the separating media—but heavy media can also be used.

FUEL PROCESS COMPANY

"D" at 10th AVE.··· SOUTH CHARLESTON··· WEST VIRGINIA

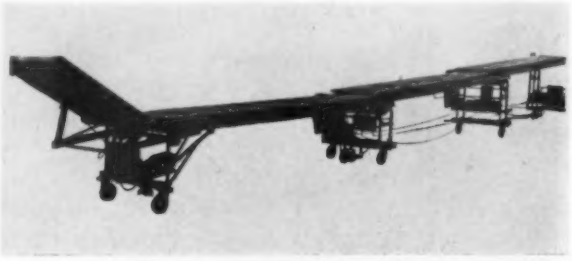
New Machinery
and Equipment

For Further Information Use Card on Pages 139-140

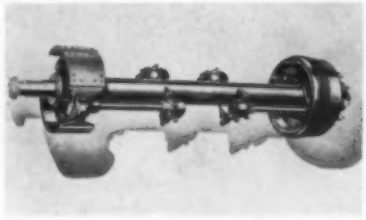


• Smith Engineering Works has developed a new and larger size jaw crusher with a 42- by 48-in. opening to meet the demand for a larger capacity primary crusher that will take bigger rock. Design features include a two-piece, double-wall box section welded steel frame and a massive cast steel swinging jaw with extra large cylindrical roller bearings throughout. **(51)**

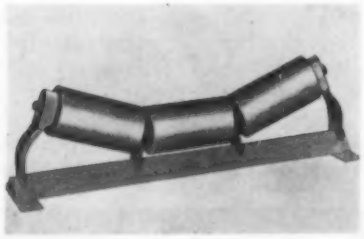
• Model TS-40F tractor-shovel, manufactured by the Henry Manufacturing Company, has a lifting capacity of 3,000 lb. This new industrial model has powerful lift cylinders of 3½-in. diameter; 1½ in. thick solid steel lift arms; and automatic, parallel-circuit control valves. **(52)**



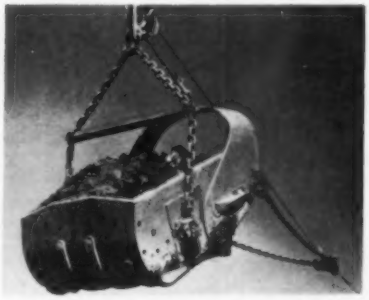
• Bag-packed materials are readily handled by the Wilkie Company's new telescopic belt conveyor. The conveyor is available in 2, 3, or 4 sections. Each section can be 10, 12, 14, or 16 ft. long. Belt widths are 10, 20, or 30 in. The belt on each section is driven by a separate motor and the conveyor itself is mobile and telescopes by power drive. Loads up to 300 lb. per lineal foot are handled. Differences in level between loading dock and trailer bed are automatically accommodated due to the pivotal action between sections. **(53)**



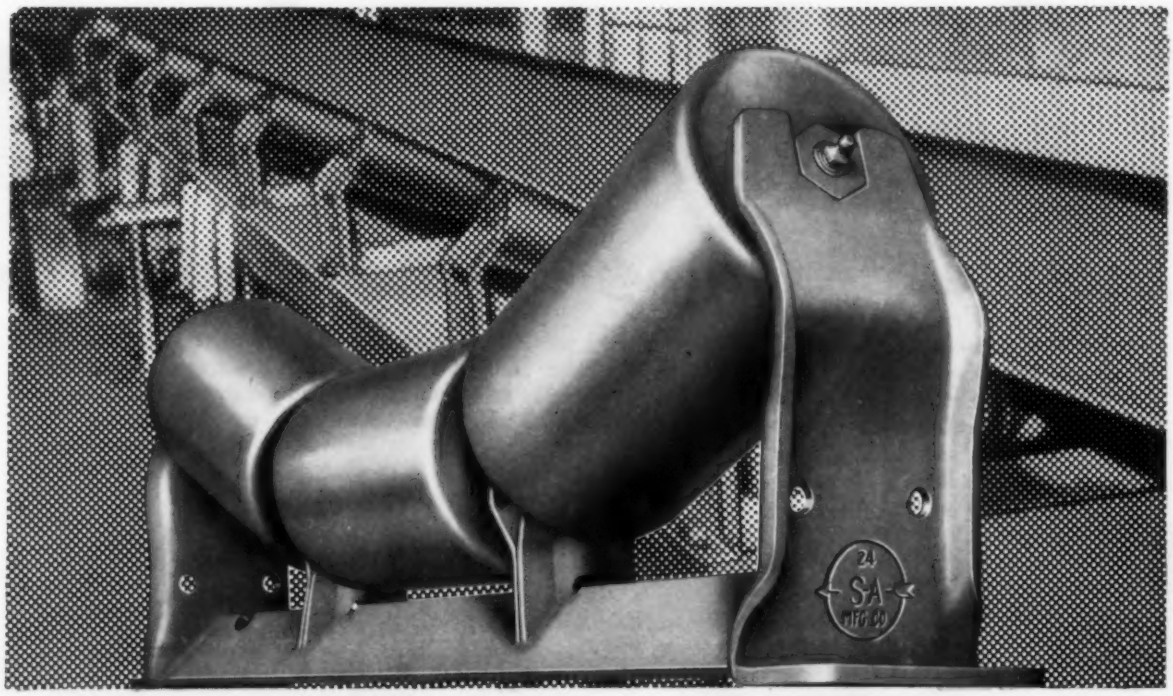
• A new 16½ in. by 8½ in. "P" series air brake has been added to the line available from the Timken-Detroit Axle Division, Rockwell Spring and Axle Company. The new "P" series brakes are for heavy braking applications and are mounted on TK-500 series axles with a load rating of 18,000 lb. on the tires for each axle. **(54)**



• Marco belt conveyor idlers, manufactured by E. F. Marsh Engineering Company, feature pre-lubricated, permanently sealed, self-aligned roller bearings. The rolls are made of mechanical tubing of uniform wall thickness to insure concentricity, balance, and smooth operation. A formed steel deflector shield prevents the entrance of material between end rolls and brackets. An all-steel, jig-welded supporting frame assures permanent roll alignment. **(55)**



• The "A" Series of automatic dragline buckets, with capacities ranging from ½ to 3 cu. yd., has been added to the line manufactured by the Page Engineering Company. Features incorporated in the low-cost line are a heavier, one-piece bottom plate; a new, improved lip; a two-position hitchplate; a smooth action dump block; flared sides; forward arch; reversible tooth points; and heat treated alloy steel hoist and load chains. The "A" Series is available in light-medium, and general purpose, and heavy-duty classes. **(56)**



STEPHEN S-A ADAMSON IDLERS offer a combination of *Quality* features that assure dependable, full capacity conveying!

Profitable conveying demands maximum performance and troublefree service from the conveyor idlers. Down time is costly and you usually pay the price of buying "something just as good" through costly breakdowns. There is no substitute for quality . . . the combination of quality features found only in S-A IDLERS assure maximum performance and dependable, trouble-free operation with less maintenance . . . even under the most severe conveying conditions.

- **SPUN END, ONE PIECE ROLLERS . . . consisting of carrying surface and ends spun from a single piece of heavy gauge steel tubing plus an inner bearing tube welded to the spun ends. Rollers are available in 4", 5" and 6" diameter.**
- **PERMANENTLY SEALED . . . precision ball bearings are protected by a die-cast double labyrinth seal which will not corrode or wear . . . insures lasting protection of bearings from dirt and moisture.**
- **PRE-LUBRICATED . . . sufficient grease to last the normal life of each idler is sealed into each roller at the factory. Alemite fittings also provided for easy re-lubrication if necessary.**
- **QUICK-CHANGE ROLLERS . . . pre-adjusted rollers slide easily in or out of the hex-slots in the supporting brackets . . . providing fast roller changes without the use of tools.**

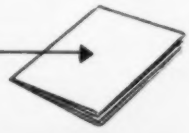
S·A BELT CLEANER

Protects and extends the life of valuable belts. The spring-blade wipes wet or dry particles from belts. Adjustable to any width . . . easily installed . . . no moving parts . . . no power drive required. Request Bulletin 1754.

S·A HOLDBACKS

Mounts on headshafts of belt conveyors and bucket elevators to prevent reversal under load in case of power failure. Safeguards personnel and equipment. Quickly and easily mounted . . . engages with instant positive grip but without shock. No ratchet to become fouled. Request Bulletin 155.

—WRITE TODAY



. . . for complete information.
Request Bulletin 355.

STANDARD PRODUCTS DIVISION
STEPHEN S-ADAMSON MFG. CO.
20 Ridgeway Ave. Aurora, Illinois

Eagle crushers

mobile crushing plants *are a part of*

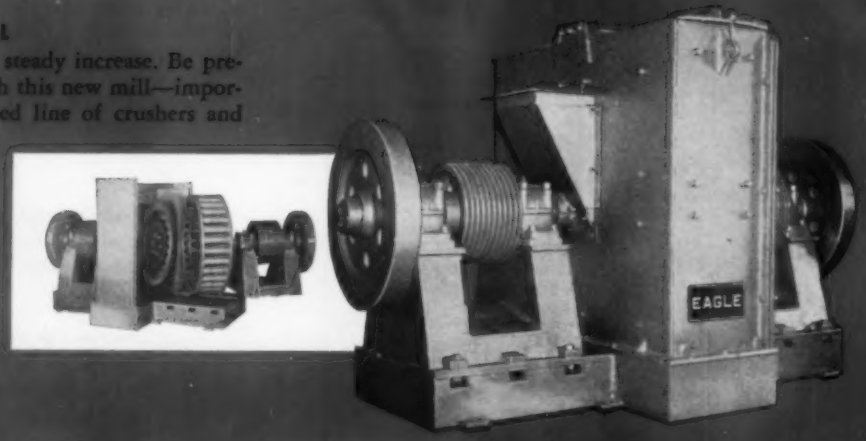
18 x 36 JAW CRUSHER—This portable jaw crusher plant is producing crushed stone and aggregate for cushioning the concrete on nearby super-highway. It delivers at the rate of 125 tons per hour—receives its power from electric generator set. Heart of this crushing plant is an 18 x 36 roller bearing jaw crusher—ready to tackle any crushable material that enters its super-tough manganese steel jaws.

stationary crushers *for every need . .*

4-CAGE DISINTEGRATING MILL

The market for fines is on the steady increase. Be prepared to meet the demand with this new mill—important addition to a distinguished line of crushers and pulverizers.

Quick access—when occasion demands it you can get at and into this Eagle cage mill faster than into any comparable model. Remove pin to raise hinged lid, then 6 bolts to remove access plate.



EAGLE CRUSHER CO., *Inc.*

give you an edge

today's construction picture . . .

PRODUCE MORE FINES!—Eagle's 4-cage disintegrating mill does an outstanding job of reducing limestone, fertilizing compounds, slag, clay, pre-crushed stone, etc. Capacities range from 10 to 55 tons per hour depending on size of machine and nature of material. On wheels, this crushing plant is far more useful!

On the job in eastern Indiana at well known limestone plant. Operator is getting more and better fines than ever before.

With a $40,000,000,000 market ahead in the next decade or so, foresighted contractors are looking for modern, time-saving, yet reliable equipment to turn out more and more of the stuff that roads are made of. If you have material to crush and deliver, the mobility feature of a crushing plant on wheels gives you an edge on competition.

To the task of designing that kind of crushing equipment Eagle brings a quarter century of experience and a hatful of know-how. Nearly every crushing job calls for specialized engineering knowledge. Eagle can supply that, too — yours for the asking!

dependable "bid winners"

36 x 42 HAMMERMILL

A large size mill for that large size job! Noted for the quality of limestone it produces this mill will deliver 100 to 250 tons per hour. In many places it serves as a primary crusher, too. All parts subject to wear are accessible and interchangeable—saving both time and money.

Size of output may be adjusted without stopping machine.

JAW CRUSHERS

First in the fine family of Eagles, this jaw crusher is as rugged as it looks. A modern design, primary crusher, it is made in sizes of 10" x 16" to 30" x 42". Has reversible crusher jaws and cheek plates for greater mileage. Can be supplied in a variety of styles — skid-mounted, trailer, portable or roadside. Really does the job!

GALION, OHIO, U.S.A.

JAW CRUSHERS • IMPACT BREAKERS
PULVERIZERS • CONVEYORS • LOADERS

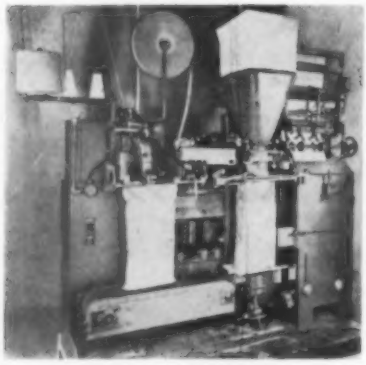
Eagle Crushers—both jaw and hammermill, bear the benchmarks of the experienced manufacturer—simple design, durable construction, ease of servicing.

Eagle originated the one-piece, electrically welded frame — has pioneered in many other crusher improvements.

Both jaw and hammermill types come in a variety of sizes and mountings. Complete crushing plants are designed to fit specific needs.

Eagle's fast wheeling, hard-hitting hammermills are known for good cubical limestone reduction.

• Ford's 1957 Stlyeside pickup, useful in transporting personnel and repair parts to the field, has a 25 percent larger load area than last year's models. The new pickup, rated at 5,000 lb. g. v. w., has a load space capacity of 56.05 cu. ft. It is available in 6½-, 8-, and 9-ft. body sizes. All-welded construction with integral steel skid strips and sturdy box-section corner reinforcements add to its rigidity. Improved toggle type latches hold the tailgate firmly in place, providing clamp-tight seal and increased side panel strength. **(57)**

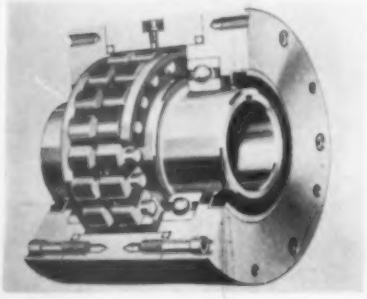


• Fully automatic packaging with open mouth multiwall bags is possible with the VredOMatic packer, a recent development of the St. Regis Paper Company. The packer positions, opens, fills, closes, and sews automatically, with or without tape, open mouth multiwall bags holding 25 to 125 lb. of granular, free-flowing material. Production capacity is from 6 to 12 bags per minute, depending on the material and the bag capacity. Only one man is required to keep the machine supplied with empty bags, and tape and thread for the sewing machine. **(58)**

Formsprag Company. Series B, recommended for true over-running applications, for low speed service when the inner race over-runs (when both races rotate during some portion of the cycle), is available in bore diameters ranging from 2¼ to 5½ in., with torque capacities from 1,875 to 11,600 foot-pounds. Series C, intended for indexing and backstopping applications, is available in bore diameters from 2¾ to 5½ in., with torque capacities from 3,160 to 11,600 foot-pounds. **(59)**

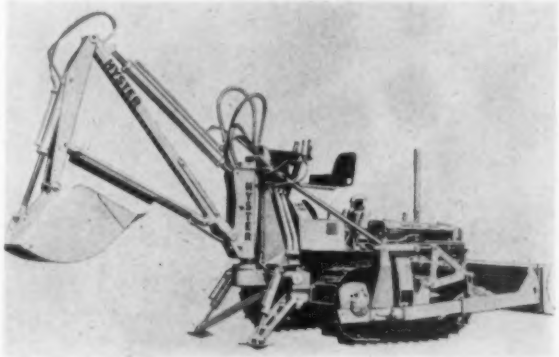
• Intended for general maintenance and repair work, a new line of small, compact, portable welders has been introduced by the Power Arc Corporation. Model 200A delivers 200 amps on 230-v. lines and 180 amps on 115- or 208-v. lines. Weighing 65 lb., this model has a maximum 25-v. output which permits contact or arc welding. Model 400A, a larger machine, works on 440- or 230-v. lines. Other models are available for use on International Harvester Electrall tractors and LeTourneau-Westinghouse electric prime movers. **(60)**

• The Thor Power Tool Company has entered the portable electric generator field with the introduction of two 1,500 watt models, the EG-1.5A for alternating current, and the EG-1.5D for direct current. Powered by gasoline engines, the models provide 13 amperes of 115-v. current and are 23¾ in. high and 23 in. in diameter. The vertical shaft design permits the entire weight of the generator to be supported by tubular framework. Simple shock mounting isolates the rotating armature action and engine vibration from the frame. **(61)**

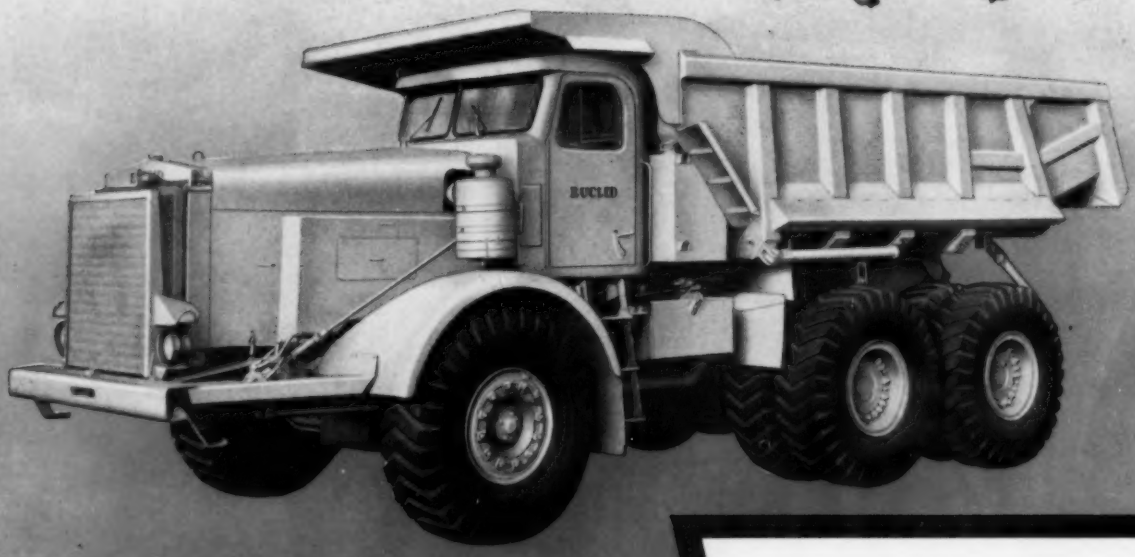


• Two new series of sealed, double ball-bearing sprag clutches for over-running, indexing, and backstopping purposes are now available from the

• Specifically designed for the Caterpillar D4 tractor, the ½-cu. yd. capacity D4 backhoe, manufactured by the Hyster Company, features all hydraulic controls and full track oscillation. The backhoe digs to 13 ft. 6 in., loads to 9 ft. 7 in. and has 240-deg. swing. It mounts and demounts in 45 minutes. Hydraulically operated outriggers can be adjusted simultaneously or individually to level the tractor. **(62)**



Now MOVE 40 TON LOADS AT LOWEST COST WITH THIS Euclid *R-40*



TWIN-POWER REAR-DUMP

470 OR 500 TOTAL H.P.
TORQMATIC DRIVES
18.00 x 25 TIRES
80,000 LB. PAYLOAD
26 CU. YDS. STRUCK

This model R-40 is the newest addition to Euclid's complete line of Rear-Dump haulers. Built for jobs where big loads must be hauled, it incorporates all of the advance design features that have made "Eucs" the standard of performance for hauling heavy excavation in construction, mine, quarry and industrial service.

Two power trains—each with separate engine, 3-speed Torqmatic Drive and planetary drive axle—provide plenty of power to move capacity loads over tough haul roads and steep grades. The tandem axles are spring mounted to permit fast travel on good haul roads . . . the R-40 has a top speed of 26 mph with full payload.

Hydraulic booster steering makes this big Euclid easy to handle in close quarters and on tough hauls. Dumping angle of 67° and smooth interior of exhaust heated body assure quick, clean shedding of the load into hoppers, over the bank, or on the fill.

Your Euclid dealer will be glad to discuss the model R-40 and your off-highway hauling problems. He'll provide a production-cost estimate for present or planned operations, and can show you why ***Euclids are your best investment.***

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"

World's Largest Builder of Truck-Trailers

FRUEHAUF TRAILER COMPANY

10962 Harper Avenue • Detroit 32, Michigan

✓ **PLEASE SEND THE FREE LITERATURE ON FRUEHAUF CONSTRUCTION TRAILERS AT ONCE!**

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CITY_____ STATE_____

☆ ***Fill in or just attach to letterhead and mail.***

THE EFFICIENCY OF YOUR

Pit and Quarry

COST "CUTTERS"

Claims of efficiency mean nothing unless backed up by actual cases. The Fruehauf roadbuilding Trailers shown here are saving real money for their owners! Here are the *facts* in black and white.

Elmer Burger, driver-owner hauling sand and gravel for contractor Walter Morrell, Redford, Michigan, has cut equipment costs by hauling 40,000 pounds of payload per trip in one Fruehauf Cable Dump Semi-Trailer — previously a load requiring a combination dump truck and 4-wheel Trailer.

The Geo. F. Alger Co., Detroit, has speeded up cement delivery to a matter of 27 minutes for 170 barrels, and reduced manpower needed from 4 to 1, with Fruehauf Twin-Screw Bulk Commodity Tanks.

The Elmer C. Breuer Company of Cleveland hauls steel — one of the toughest kinds of loads — at the rate of a million tons per year, on Fruehauf Platform Trailers — and finds they operate longer for less, especially in the vital matter of tandem tire mileage.

These are the kind of savings *you* can put in *your* pocket.

FRUEHAUF FLEET IS PART OF YOUR ROADBUILDING PROFIT!

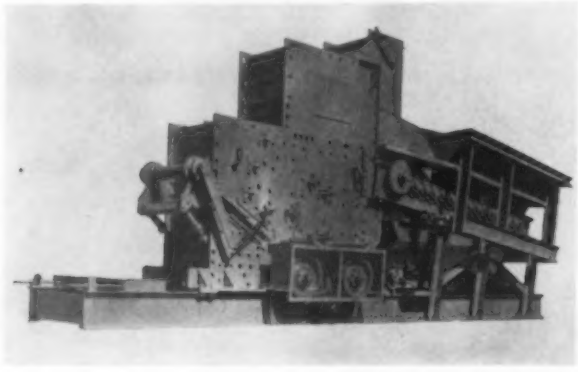
• Rotary-percussive drilling of rock, a new technique in rock drilling, has recently become available to the mining and quarrying industries of North America. Maschinenfabrik Rudolf Hausherr u. Soehne G.m.b.H. of Westphalia in Western Germany, a pioneer in the development of rotary-percussive drilling, now offers the DK-7ES ALBO through its general representative, the B. J. Nykerk Corporation, New York.

The ALBO is a carefully-designed drill capable of drilling either by rotary-percussion or purely rotary. This change is accomplished by a simple change of drill rods and bits. The machine combines the best features of the rotary and the percussive, or hammer drills, and in recent tests is reported to have achieved penetration rates in excess of 5 ft. per minute while drilling in hard abrasive sandstone and tough dolomite. Bit wearing characteristics experienced in these tests were reportedly excellent.

Round, hollow-centered drill steels are used, and these have a reported useful life of 33,000 ft. of hole under normal drilling conditions. These drill steels have 1:12 tapered ends which fit both the chuck and bits and eliminate the need for shanking and threading of rods. No shims are necessary. The favorable drill bit and steel wearing characteristics are effected by the sturdy feed shell which exerts a constant thrust of up to 2 tons on the drilling face, keeping the tungsten carbide tipped bits in constant contact with the rock.

Hausherr manufacturers powerful drilling carriages or jumbos which have been engineered to contain these high thrusts. The drilling carriages are fully articulated and are powered by pneumatically-driven motors which permit fingertip control of the drill slide by the operator. Their design also permits minimum clearance between the ribs, back, and floor of drifts to reduce overbreaking.

In addition to the jumbos, Hausherr also manufactures a wide variety of equipment including electrically- and pneumatically-powered large-bore rotary rock drills, mine car cagers and spotters, and many other types of mining and quarrying machines. **(63)**



• The Universal Wobbler Feeder, in combination with a Universal 3645 Impact Master, exhibited at the Road Show by the Universal Engineering Corporation, is a single crusher portable plant capable of closed circuit operation through high ratio of production. The Universal Wobbler Feeder eliminates feed stoppage and reduces wear on Impact Master rotor hammers by taking out all 2-in. minus material ahead of the crusher. In field operations, material removed by the Wobbler is deposited on the conveyor receiving crushed material from the Impact Master, or wasted if large amounts of mud and dirt are present. **(64)**

• The United States Specialties Company has introduced its new Remov-All Series "999" line of oil bath air cleaners with removable elements and removable after cleaner. The oil bath sections are combined in a single unit with a fibrous after cleaner which needs no replacing. All cleaner elements are easily and quickly removed, cleaned, and reinserted. Servicing of the entire unit is accomplished by one man easily and quickly. Once the cleaner housing is installed on the engine or prime unit, it is not necessary to break the connections to service the cleaner. Both the middle and bottom sections have filter elements composed of positive-meshing and non-collapsible wire springs. **(66)**

• A new finish which provides a sure, non-slip wet grip is now being used on the Snorkel line of coated work gloves manufactured by the Edmont Manufacturing Company. The Snorkel gloves are coated with a vinyl plastic, formulated and prepared by Edmont. Its high resistance to abrasion, oils, acids, caustics, and many solvents makes it ideal for many handling operations. Snorkel gloves are made with jersey liners for flexibility and comfort. Available styles include a fully-coated knitwrist (illustrated), a 12-in. gauntlet, and a palm coated knitwrist. All have the new non-slip finish. **(65)**

Ohio contracting firm, S. E. Johnson Co., reports:

"We unload the largest hopper cars in 45 minutes"

"Our Barber-Greene unloader and conveyor easily handle 800 tons a day with just intermittent operation. So far, we have moved over 85,000 tons of material and have had no maintenance expense to speak of."

This statement isn't a manufacturer's specification; it is a factual, unvarnished, report typical of the many comments on outstanding performance of Barber-Greene car-unloading equipment.

Wherever it's used, the combination of the 363 Portable Conveyor and the 358 Car Unloader provides a sure way to cut unloading costs and to release cranes and other, more expensive equipment for more efficient operation on other jobs. Whatever these Barber-Greenes handle—coal, sand, gravel or other bulk materials—they do the job virtually automatically as a one-man operation.

Both conveyor and unloader are mounted on pneumatic tires for easy maneuvering about the yard . . . for fast between-job towing at truck speeds.

B-G Unloader operates above or below the rails. Portable conveyor can be equipped with screens, power hoist and other accessory equipment. Capacity ranges to 150 t.p.h. Powered by gas or electricity.

56-13-PO

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

Save horsepower!

Equip screw conveyors with LINK-BELT components

Today . . . LINK-BELT alone offers a complete line of ball and roller bearing accessories . . . plus everything else needed for the modern screw conveyor

THIS complete package of power-saving components can make a big difference in the rotating efficiency of your screw conveyors. And all are made by Link-Belt — *one source* for complete screw conveyor systems.

Countershaft ends, as well as new trough ends and hangers, incorporate Link-Belt self-aligning ball or roller bearings. Their free-rolling action reduces starting and running friction — lowers power requirements.

Power units feature the Link-Belt enclosed Motogear that provides better than 96% efficiency. And Link-Belt offers the new Quik-Link conveyor screw for ease in removal of screw or accessories.

Call a nearby Link-Belt office or authorized stock-carrying distributor for facts. Write for Folder 2489.

On new or existing screw conveyors . . . these LINK-BELT components

DOUBLE BALL BEARING TROUGH END provides drive shaft rigidity by supporting shaft at two points. It resists overhung loads at drive end and takes thrust loads of screw in either direction.

SPACER BLOCK keeps dirt out of bearing —stops grease, etc., from contaminating product. Can be used with lip, felt or waste packing seal to prevent bearing-product contact.

BALL BEARING HANGER. Self-aligning bearing and seal adjust to shaft deflection . . . prevent lubrication problems, noises, loss of efficiency, bearing, shaft or hanger damage.

Save maintenance!

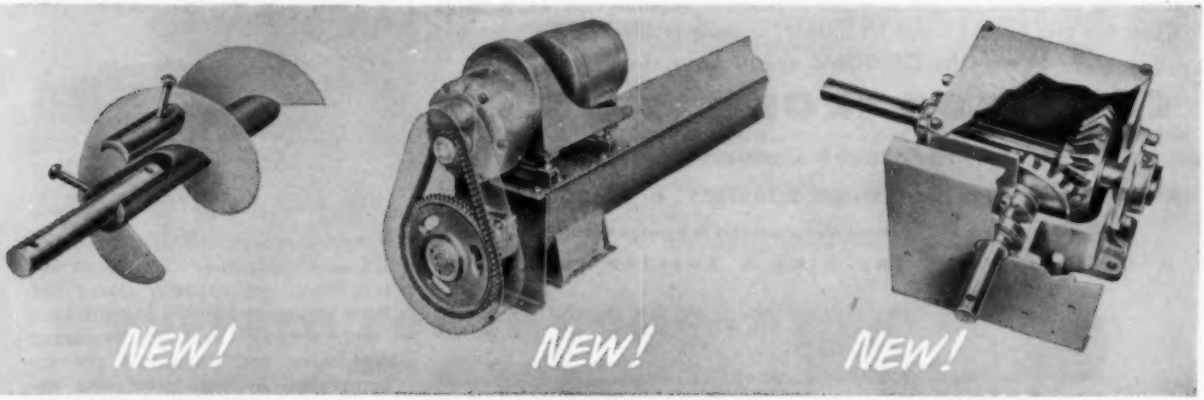
these NEW

LINK-BELT

SCREW CONVEYORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 14,333

REDUCE FRICTION ◆ CUT DOWNTIME ◆ ANSWER DRIVE PROBLEMS



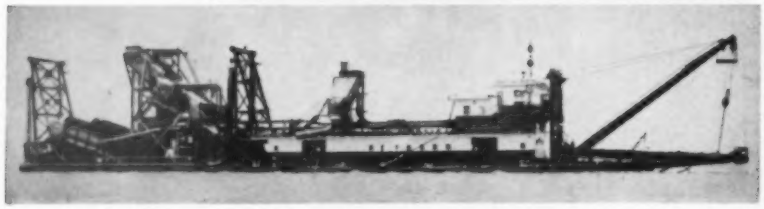
QUIK-LINK CONVEYOR SCREW is readily removed without disturbing other parts . . . saves time in replacing hanger bearings or other components.

LINK-BELT MOTOGEAR mounts on top of screw conveyor. Link-Belt also makes a full, pre-integrated line of gear and chain drives, couplings, bearings, etc.

ENCLOSED COUNTERSHAFT END connects two conveyors at right angles . . . permits use of right-angle drive. Drive shaft roller bearings take thrust in either direction. Ball bearings support countershaft.

AKINS Classifiers

washing oyster shell for cement



These 84" Akins Flared Tank Classifiers comprise one of many installations of Akins for washing oyster shell. This is typical of special applications where Akins excels in meeting exacting requirements at low cost.

Clean, high grade deposits of oyster shell are badly depleted and shell producers require washing equipment for processing low grade shell which is contaminated with mud and slime. Akins Classifiers have been their choice because they produce a cleaner product, handle large tonnage at low cost.

Akins Classifiers designed for oyster shell washing may be equipped with special scrubbing devices if additional washing action is required. The Akins Sprav Water Box also may be added for difficult washing problems.

Akins—the ORIGINAL spiral type classifier.

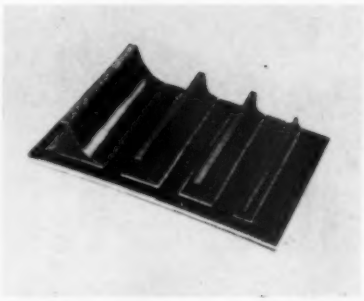
COLORADO IRON WORKS CO.

1624 17th Street • Denver 2, Colorado

AKINS CLASSIFIERS • SKINNER ROASTERS • LOWDEN DRYERS

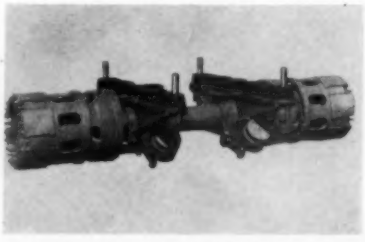
Sales Agents and Licensed Manufacturers in Foreign Countries

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.

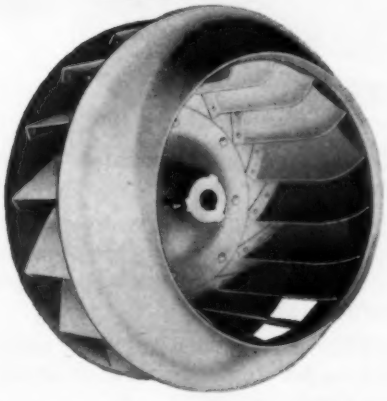


• REMA cleats are designed by the Flexible Steel Lacing Company for use on inclined conveyor belts in which gravel and other similar items have a tendency to slip or roll back down the belt. The cleats can be applied to the belt at 90 deg. (across the belt) in the form of "V's", along the sides of the belt to act as guide rails, or in any other desired pattern. REMA cleats are available in heights of 7/16 in., ¾ in., 1 in., and 1½ in., and in 36-in. lengths. **(67)**

• Model 1MAE, an electrically-driven, close-coupled pump, has been developed by the Barnes Manufacturing Company to augment its series of lightweight pumps designed for portable use or permanent pit installation. The new pump discharges 1,440 g.p.h. at 24-ft. head. **(68)**



• Application of its 80,000 lb. Model RS single axle suspension to an 80-ton, 60-cu. yd. capacity trailer has been announced by the Hendrickson Manufacturing Company. Automatic cushioning and alignment are accomplished by four drive pins encased in rubber bushings. The pins move vertically in direct relation to the movement of the load cushion. **(69)**



NEW!

BUFFALO "BLH"

FOR CLASS II THRU IV VENTILATING-INDUSTRIAL & MECHANICAL DRAFT SERVICE

THE NEW "Buffalo" Type "BLH" FAN is engineered for installations where total pressure requirements of 3¾" and up exist. These applications include mechanical draft, conduit air conditioning and many industrial applications.

CANTILEVERED INLET VANES eliminate center ring, reducing turbulence and improving air flow through the inlet. The die-formed inlet vanes and inlet bell further contribute to smooth air flow, minimizing effects of unfavorable inlet conditions.

THE PROVEN BL WHEEL has a deep drawn flange to form a true half-circle with the inlet cone. Highly efficient non-overloading backward-curved blades, solid back plate and extra heavy hub make this wheel ideally suited to this service.

IMPROVED FAN OUTLET — reduces outlet air turbulence from fan cutoff into duct by making more even, gradual change from velocity to static pressure. Without this complete streamlining of inlet, housing AND outlet, such high efficiency is impossible.

Smooth Divergent Flow

86% MECHANICAL EFFICIENCY — made possible by a combination of inlet, wheel and housing design. The smoothest "air-ride" in fan history.

"Buffalo" "Q" FACTOR* CONSTRUCTION gives you many years of trouble-free service. Housing is all-welded construction. Wheel and blades are riveted and welded for maximum strength, the basic design having been thoroughly tested in the Vacuum Pit, a "Buffalo" exclusive.

AVAILABLE in wheel diameters from 18¼" to 80¾", the new "Buffalo" "BLH" merits your consideration. Write for details on your company letterhead — today.

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

BUFFALO FORGE COMPANY

BUFFALO, NEW YORK

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo"

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

New '57 Ford

Modern through and through ...to cost you less!

New Tilt Cab line offers six series from 18,000-lb. GVW to 60,000-lb. GCW. Up to 212 horsepower.

Modern with a purpose—that's the Ford truck story for '57. Modern through and through to give you high-efficiency performance that costs you less!

And, thanks to volume production, Ford trucks cost you less right from the start. New Ford Tilt Cabs—in addition to being America's most advanced line of Tilt Cabs—are the lowest-priced!*

Ford's tandem axle models are built from the ground up for extra-heavy-duty work. These husky trucks are rated to carry as much as 6,000 pounds more payload than other leading tandems with comparable specifications.

For durability, there's new toughness everywhere—in stronger frames, in sturdier axles, in higher-capacity springs . . . more reasons why *Ford trucks last longer than any other leading make.*

One look tells you—here's something new, really new, in trucks. For the *full* story on what they can do, contact your Ford Dealer today!

**Based on a comparison of factory-suggested list prices.*

FORD TRUCKS COST LESS

. . . LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!

ONLY FORD GIVES YOU ALL THESE MODERN FEATURES

NEW Heavy Duty V-8 engines now have 4-barrel carburetion standard. Fresh-air intake with new thermostatic control optional on 302 and 332 V-8 engines. Dual exhausts also available.

NEW Styleside pickup bodies, standard at no extra cost. America's biggest pickup bodies! Built wider with all-steel rugged box section corner reinforcements and recessed taillights.

NEW riding comfort! A completely new chassis suspension, roomy cabs with increased visibility, greatly improved riding and handling ease.

NEW power advances! New higher horsepower, new freer breathing, new higher compression ratios, new Super-Filter air cleaner. New advancements from camshafts to carburetors.

NEW Driverized cabs—completely new—stronger, roomier, smarter! New wider full-wrap windshield. New inboard cab step, new Hi-Dri ventilation, new easy-to-read instrument panel!

NEW chassis strength! New frames, up to 13% stronger. New sturdier axles! New higher-capacity, easier-riding springs!

MAIL THIS COUPON TODAY!

FORD Division of FORD MOTOR COMPANY, P. O. Box 658: Dearborn, Michigan

Please send me the following truck model literature:

☐ CONVENTIONAL ☐ TILT CAB ☐ TANDEM

☐ LIGHT DUTY ☐ MEDIUM DUTY ☐ HEAVY DUTY

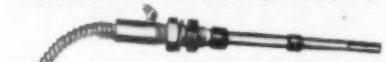
Name_____

Address_____

City_____ State_____

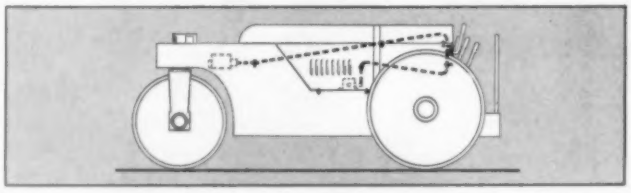
TRU-LAY *PUSH*-PULLS

give trouble-free, lifetime service for remote control of construction and quarrying equipment

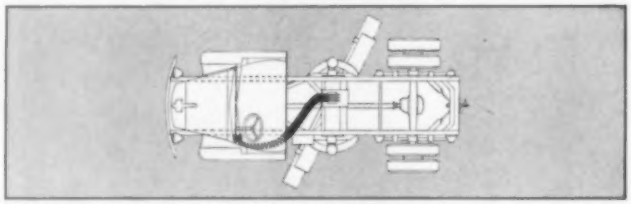


Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

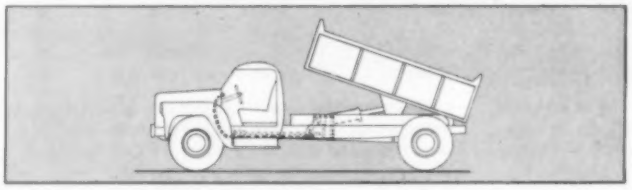
We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.



• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156" long, is capable of a 2" stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

***Look for* PUSH-PULLS** *on the heavy equipment you buy. It will be easier to operate and less costly to maintain. For complete information we'll be glad to send you this* DATA FILE . . .

ACCO

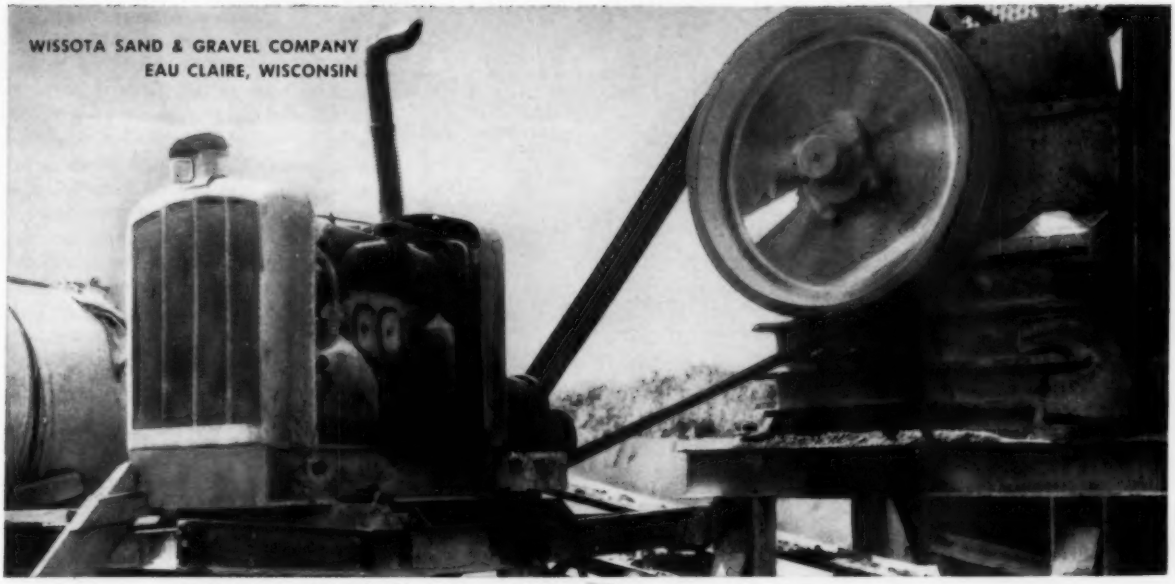
AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

Push-Pull DATA FILE

601-K Stephenson Bldg., Detroit 2
2216-K South Garfield Ave., Los Angeles 22 • 929-K Connecticut Ave., Bridgeport 2, Conn.

• The Damco Blastholer, a self-propelled rotary unit, was designed by the Drilling Accessory Manufacturing Company, Inc., for applications in which continuous blasting or drilling is required. The unit drills holes from 2¼ to 3⅞ in. There are four speeds from 25 to 325 r.p.m. instantly available to the rotary table, depending on requirements to match material being drilled, and four speeds forward and one reverse for moving the rig. The chassis is a heavy-duty, all-welded structural steel frame on pneumatic dual tires. Overall length of the frame is 20 ft. 10 in., including mast (when down). Road height with mast down is 6 ft. 2 in., and with mast up, 21 ft. 6 in. **(70)**

• A new conversion hydraulic hoist, designated Model 443, has been designed by the Galion Allsteel Body Company for installation on ¾- and 1-ton trucks. The new Class 6 hoist is suitable for mounting under 6½- to 9½-ft. pick-up bodies, platform bodies up to 10 ft., or light-duty Galion Allsteel dump bodies up to 8 ft. long. Hoist capacity rating is up to 6 tons, depending on body length and pivot. **(71)**



OVERHAULS BE DAMMED!

Wissota's using Cities Service lubricants

Overhaul? What's that?

Wissota Sand and Gravel is too busy supplying aggregates for dams and highways to tolerate downtime . . . and they don't have to!

Take the G.M. diesel above. Since 1948, it has run without major overhaul . . . and none is anticipated. It operates on Cities Service C-300 Motor Oil.

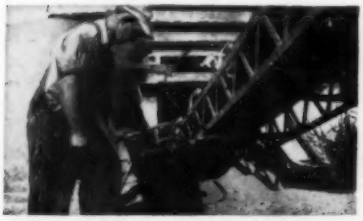
Or consider Wissota's UD 24 International. So far, it has logged six years with nothing but a new set of rings, installed after 4500 hours. Again, thanks to Cities Service C-300 Motor Oil.

And don't overlook the diesel-driven locomotive crane . . . the one that's gone seven years with nothing but an adjustment of its injectors . . . and moved an estimated 2,000,000 tons of material. Score another for Cities Service C-300 Motor Oil.

"Actually, we've enjoyed similar performance from our seven washing plants and all 58 pieces of mechanized equipment, since we switched to Cities Service," says Treasurer Ray Larson.

"This, in the face of a yearly production that runs around 750,000 tons! All our Cities Service products—C-300 Motor Oil, Trojan MP Gear Oil, and No. 2 Diesel Fuel—keep us running trouble-free."

Like Wissota, you can expect big things from Cities Service fuels and lubricants. Get the facts, without obligation, from a nearby Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.



Where Lubrication Counts! "We get terrific bearing life since we switched to Cities Service," says Treasurer Ray Larson.

One of 7 Washing Plants of Wissota Sand & Gravel. With the aid of Cities Service lubrication, they turn out 750,000 tons of aggregates a year!

Equipment Galore! 40 trucks, 14 cranes and shovels, and 4 bulldozers. After 7 yrs. using Cities Service C-300 Oil, one shovel needs no overhaul!

CITIES SERVICE

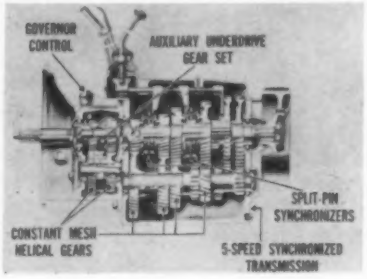
QUALITY PETROLEUM PRODUCTS

• Drott "4-in-1" buckets are now being offered as optional equipment on all four-wheel-drive "Payloader" tractor-shovels, manufactured by the Frank G. Hough Company. The "4-in-1" attachment can be used as a shovel, clamshell, scraper, or bulldozer. **(72)**

ment Company's Transmission Division, is an integrated combination of a five-speed synchronized transmission and an auxiliary unit composed of a direct and an underdrive gear set which are semi-automatically engaged. The underdive gear ratio splits the geared steps of the transmission, providing ten closely-spaced gear ratios. Floorboarding the accelerator shifts the auxiliary into underdrive, providing additional gear reduction and power. The auxiliary automatically returns to direct drive when the driver relaxes the accelerator. **(75)**

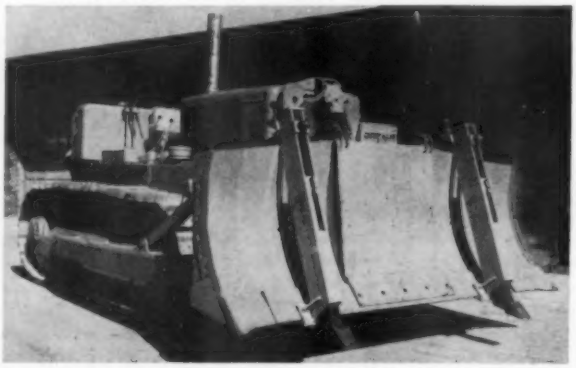
• Lightweight safety spectacles which can be used for semi-hazardous operations as well as for the protection of visitors to in-plant locations are available from the General Scientific Equipment Company. Lenses, either clear or dark green, are molded of thick impact-resistant plastic. Frames fit any face with a minimum of adjustment. The spectacles are ideal for light grinding, spot welding, laboratory, and similar applications. **(73)**

• Components of Allis-Chalmers' Thermopruf chain system for wet process kilns include the Thermopruf twin-valley shackle (top center); chain links (top left and right); and the "missing link" (center). The bottom portion of the illustration shows Thermopruf chain with peened "missing link" in the center and new tapered, pear-shaped end connecting links. The chains are assembled by slipping the spread segment of one connecting link through the closed segment of the next. Squeezing the spread segments together forms chain. Lengths of Thermopruf chain are joined in the middle by the Thermopruf positive-grip "missing link." **(74)**



• StepMatic, a semi-automatic, heavy-duty truck transmission recently developed by the Clark Equip-

• Useful in carrying and dumping loads in mines, the Scoot-Crete, produced by Getman Brothers, can carry loads up to 3,500 lb. at speeds up to 15 m.p.h. It turns in its own length, climbs 25-deg. grades, and operates forwards or backwards. Powered by a Deutz air-cooled diesel engine imported from Kloeckner-Humboldt-Deutz AG. in Cologne, West Germany, the Scoot-Crete can be loaded, driven, and dumped by one man. **(76)**

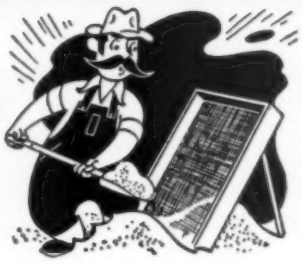


• The Ransome Corporation has introduced Model R-89 ripper for use in heavy-duty ripping for attachment to bulldozers 43 in. to 60 in. high in the 150- to 320-hp. tractor range. The Model R-89 features the one man rack and pinion depth adjustment, and has a 4 in. by 7 in. ripping shank with a new 28-lb. cast manganese tooth. The R-89 is useful in mining and quarrying operations. **(77)**

YOUR GUARANTEE OF PERFORMANCE

In the oil fields of the world the HUGHES trademark has been accepted as a guarantee of performance . . . *consistent, dependable performance* — for almost a half century. Through intensive and aggressive research, in the laboratory and in the field, HUGHES is continuing to advance the quality and performance of its products . . . worldwide.

Screenings



by Ray L. Smith Jr.

AN INTRIGUING tale is told about a salesman who takes a card out of the customer file and pencils on it: "This day I have placed the curse on this man."

The somewhat unusual thing about this amateur curse is that within a year after the note is written on the card, the man invariably loses his position or is relegated to some subordinate position.

"Our friend," so goes the tale, "is not the seventh son of the seventh son. He has no occult powers. When he places the curse on a man, he does it with good reason. When, call after call, he finds an executive unresponsive to trends or unfamiliar with current conditions, or when he finds an executive so wrapped up in his imaginary importance that he delegates vitally important tasks to subordinates—when he finds a man blind to reasonable talk and with a mind closed—then is the curse placed."

Of course, all this salesman had is judgment enough to know that the man is headed for failure and that the critical year has arrived. Many a department head who is snooty to salesmen would be surprised if he learned how accurately the salesmen have sized him up.

Bucket of Beauty . . .

THE CAPTION which we received with the accompanying photograph asserts that the young lady operating this front end loader is lifting "a bucket of beauty." Ordinarily, we take a dim view of such philosophical pronouncements, but we're inclined to accept this particular bit of dogma on the grounds that in all our travels we haven't yet caught up with even one outstandingly cute loader operator, let alone stumble onto a shovel-load of material such as is pictured. Even from a detached view, which isn't altogether easy to maintain, it strikes us that the Eimco nominees could give an excellent account of themselves in a considerably more crowded field of competition.

Alas! Poor Puppy

"SATISFIED customers aren't just people who buy our various products," reports Maude Sermuks, of the Permanente Cement traffic department. Maude gives as an example an incident that occurred just at dusk one recent evening. As a huge bulk cement rig rolled up to the plant gate, a small puppy darted in front of the truck and was brushed aside by one of the heavy wheels. The truck immediately stopped and its driver went back to ascertain the pup's damage. "Fortunately," Maude says, "all the puppy required was to have his ears scratched sympathetically and his head patted and off he trotted, another 'satisfied customer' of Permanente."

Potpourri and Succotash

Arriving at a strange hotel, a fussy woman thought she'd better know where the fire escape was. So she started exploring. On her tour she opened a door and found herself in a bathroom occupied by an elderly gentleman.

"Oh, I'm sorry," she twitted. "I was looking for the fire escape."

Continuing her search, she presently heard the pad of bare feet behind her and a shout made her turn. It was the elderly man, clad in a bath towel.

"Wait a minute," he gasped, "where's the fire?"

A woman went to a doctor to complain about her husband's delusion. "It's terrible, doctor," she said. "All the time he thinks he's a refrigerator."

"Well," consoled the medical man, "that isn't too bad. Quite a harmless delusion, I'd say."

"The delusion I don't mind, doctor. But when he sleeps with his mouth open, the little light keeps me awake!"

Some years ago a salesman appeared in court as a witness in a civil suit. "You say you're a salesman?" queried the judge.

"Yes, your honor."

"How good a salesman?"

The salesman squirmed in his chair, but in confident tones admitted, "Sir, I'm the best salesman the company ever had."

His friend, another salesman who was in the courtroom, was surprised, because the young man had always been modest and unassuming. When proceedings were adjourned, the older salesman asked him why he had made such a statement. The first salesman blushed. "I hated to do it," he explained, "but after all, I was under oath."

A visitor from a foreign country was asked what he thought about Americans. "Funny people, you Americans," he answered. "You take a glass. You put sugar in your drink to make it sweet and lemon to make it sour; you put in gin to warm you up and ice to keep you cool. Then you say, 'Here's to you,' and drink it yourself. Funny people," he concluded shaking his head.

Change motors in minutes—

with FALK *all-steel* MOTOREDUCERS

No long and costly "down time" involved

Motors can be interchanged or replaced *in minutes* with the all-steel, All-Motor type FALK Motoreducer. No long and costly "down time" is involved in making the change!

Best of all, replacement is not limited to original make of motor—new NEMA frames may be substituted for old. This versatile Motoreducer operates with any make, speed or type of standard foot-mounted motor within its AGMA rating. No modification, no special shaft, no "partial" motor required.

In addition to unmatched motor interchangeability, this dependable gear drive—the "work horse of industry"—offers: widest choice of output-shaft position (horizontal, vertical, right-angle)...any output-shaft connection...any mounting, including wall and ceiling...standard speed range from 1.5 rpm to 1430 rpm. All these advantages, plus proved efficiency, low maintenance and extra-long life, make the All-Motor type FALK Motoreducer your best buy for any job requirement.

Furnished in sizes up to 75 hp with any make, style or type of motor; or, *without a motor if desired.* FALK Motoreducers are available from convenient factory, field or distributor stocks, from coast to coast.

Write for Bulletin 3100

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

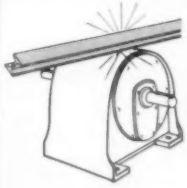
MANUFACTURERS OF:

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining

FALK

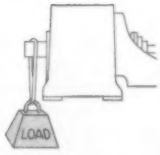
...a good name in industry

FALK "IN-BUILT" FACTORS assure full dependability—better service—longer life



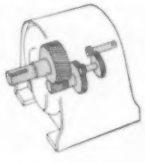
ALL-STEEL HOUSINGS

Rugged, strong, rigid ...all parts heavy steel plate, formed and welded in the Falk Weld Shop.



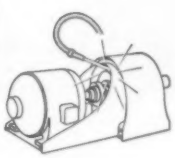
LARGE OVERHUNG LOAD CAPACITY

Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum loads.



PRECISION GEARING

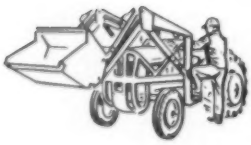
Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion.



SEALED HOUSINGS

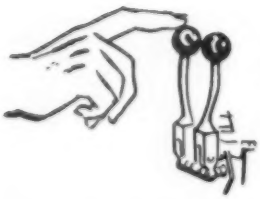
Splashproof, dustproof, oiltight. Dual closures and one-way vents keep oil in, dust and moisture out.

Time the cycle, compare the price...see how **FORD GIVES YOU MORE!**



Easy, Step-On Design

Ford Loader leaves side of tractor open. Wide, low step-plate enables operator to move quickly, safely, and easily into seat, with no climbing. Plenty of elbow room, good visibility.

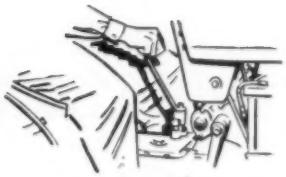


Instant Hydraulic Control

Simple controls, only a finger's reach away from the steering wheel, provide full, instant control of loader and bucket. Tractor hydraulic system is free for use with rear-mounted equipment.

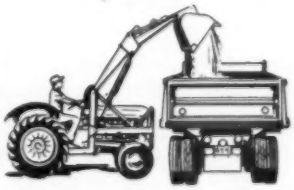
Fast, Smooth Shifting

Ford's vertical-type shift lets you change from gear to gear quickly, smoothly. Just nudge the lever to shift from forward to reverse on "back and forth" loading applications.



Greater Reach and Lift

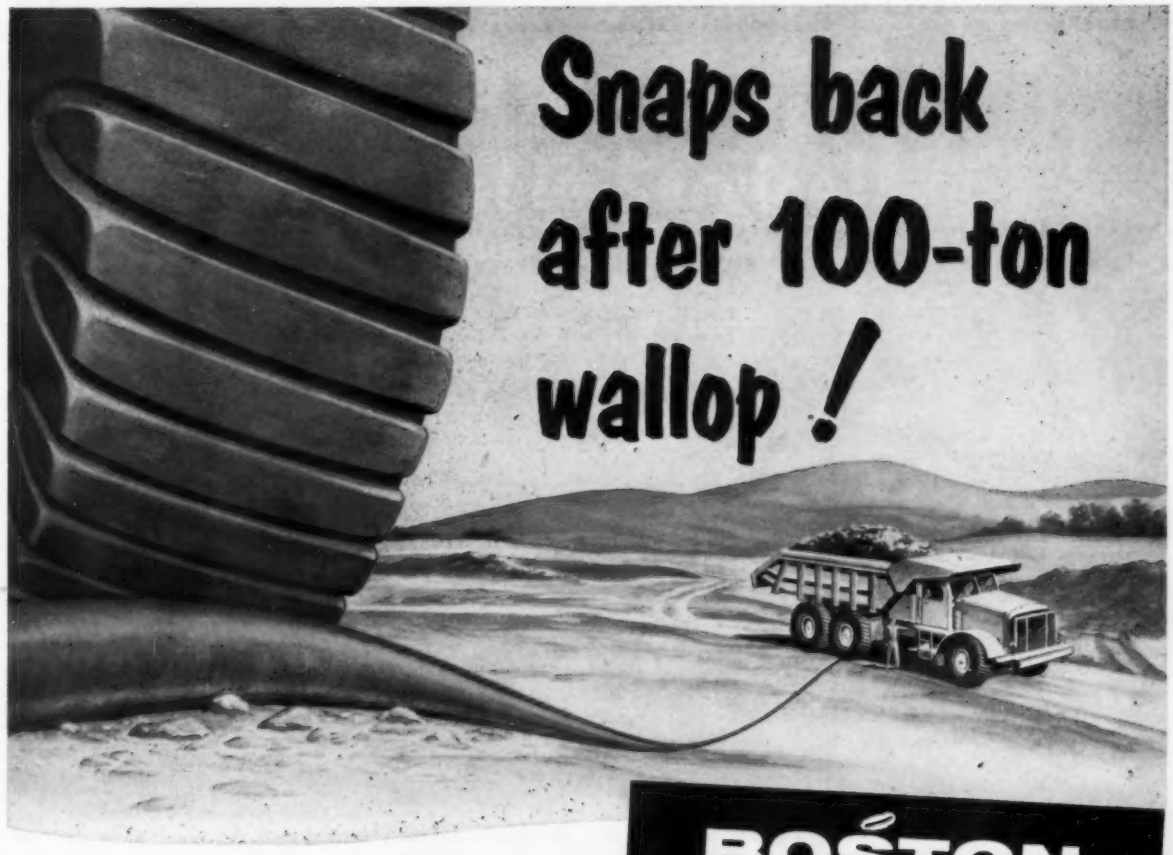
Ford Industrial Loader provides 10′ 10″ lift from ground to bucket bottom . . . 26″ reach at full lift. Load entire truck from one side. Spill-guard on bucket protects operator from falling material.



Find out how a yard-a-minute Ford Tractor-Loader can handle your jobs for less. See your Ford Tractor and Equipment dealer, or write to: Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

Ford
TRACTORS AND INDUSTRIAL EQUIPMENT

You see more **FORDS** *because they save more money!*



BOSTON
concord yellow jack
AIR HOSE

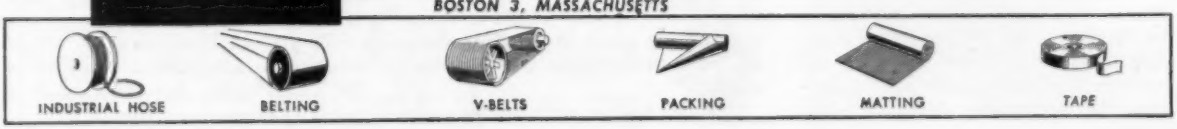
This is the hose built to take the most brutal treatment. So strong it snaps back even after being battered by a loaded Model LLD Euclid — a gross weight of 203,300 pounds!

When you consider that 45% of air hose failure is caused by *external* conditions, Boston Concord Yellow Jack is definitely the air hose to choose for your toughest jobs. It has the stamina to handle repeated rugged impact . . . the strength to withstand the highest internal pressures.

Boston Concord Yellow Jack's bright yellow cover makes it easy to identify.

Whatever your hose needs, there's a BOSTON Hose for you . . . and a BOSTON man nearby to help you solve your problems.

BOSTON BOSTON WOVEN HOSE & RUBBER CO.
BOSTON 3, MASSACHUSETTS



Labor Developments

Congress and the Unions

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations

Washington, D. C.-Philadelphia, Pa.

Another P&Q Exclusive

THE most dramatic activity going on in the labor relations field today is the series of hearings being held by the Senate Select Investigating Committee on Labor-Management corruption, presided over by Senator John L. McClellan of Arkansas. These hearings are spreading on the public record what many persons working in the field of labor relations long knew or at least suspected, namely, that the affluence of a number of union leaders, particularly in the Teamsters Union, was not due entirely to the remuneration received for their efforts on behalf of their truck driving members. Their connection with vice, both big and little, is a sordid story indeed.

Many observers of the labor scene are worried lest the success which the Committee has had in garnering headlines may prevent it from doing the full job, namely, working out in detail the relationship between their union power and their opportunity to engage in these anti-social activities. Until this is done, all that has been proved is that "there are some bad apples in the peck." This is less than an adequate support of the need for legislation which, presumably, is the reason for the Committee's investigation. There is the danger that, if the investigation is inadequate, legislation may result, but that it will not necessarily be of much help to the unfortunate businessman who finds that he has no alternative but negotiating with these leaders.

To date, the expectation is that these revelations will somehow provide enough additional support so that restrictive measures which have been "kicking around" legislative halls for some time will pass. Among these are the idea that unions should be subjected to the same anti-trust laws that govern employers; that the political power of unions should be subjected to stronger limitations; that union shops should be prevented by "right to work" laws; that welfare funds should be subjected to stronger legal safeguards; and finally, that the democratic rights of rank and file union members should be better guaranteed.

While the general connection is obvious, it is difficult to see how proof of a particular union leader's unexplainable connection with pinball machines leads directly to the conclusion that unions are monopolies and therefore must be subjected to the anti-trust laws. Such reasoning is likely to run afoul in the legislative process, thereby preventing the adoption of any legislation at all, including much needed legislation.

It is hoped that the trade union practices of these unscrupulous leaders, rather than their more salacious non-trade union practices, will receive the Committee's increasing attention. For example, there will be closer scouting of such organizing tactics as were recently revealed in connection with a racketeer-dominated local in the city of Philadelphia, whereby employees were being forced into a union through threats of violence applied to the employers; and the irresponsible use of picketing lines which prevent deliveries and impose hardships on innocent parties. The Committee has promised, but to date it has done nothing to reveal the role played by employers who occasionally appear to be more than willing accomplices to illegal or at least unethical activities.

In this connection, a far more pertinent investigation is being carried forward by a grand jury in connection with the erection of the Tobyhanna Depot in northeastern Pennsylvania. The record of collusion between political and union leaders extorting tribute from not too unwilling contractors on this government project appears at the moment to be hitting closer to the mark than the revelations of the Senate Committee.

It appears clear, even at this early stage of the various investigations, that this type of undesirable leadership is most likely to be found among unions that deal with relatively small unorganized, or badly organized employers such as the teamsters; but it is also noted among unions which represent laundry workers, certain classes of construction workers, hotel and restaurant employees, etc.

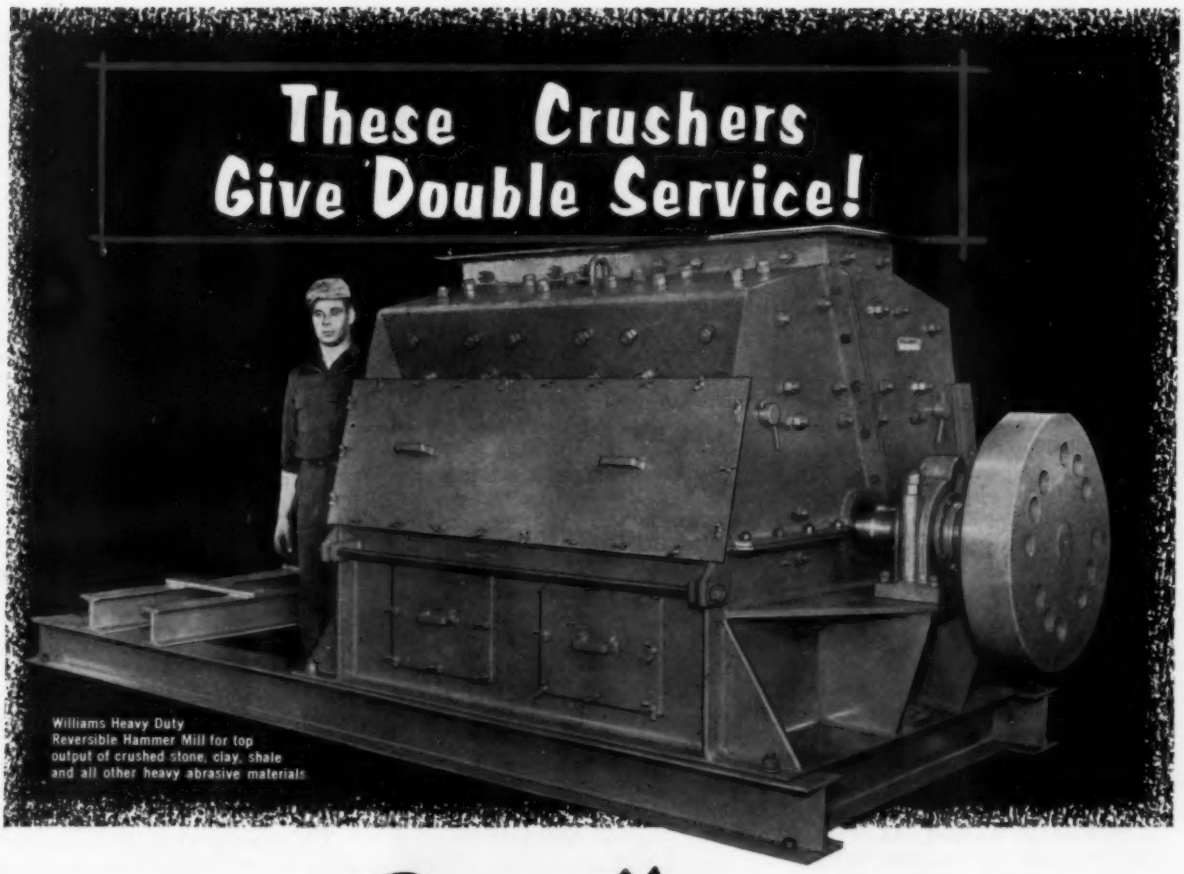
It is unlikely that any significant amount of this kind of leadership prevails in many of the strongest, best organized labor unions, such as those which represent steel workers, auto workers, rubber workers, clothing workers, machinists, etc. This is due in part to the kind of industry situation, but equally important is the basic philosophy in which the union developed and in which its leadership was nurtured.

These unions, and many others of the same type, are legitimately concerned that the reaction to the current revelations will result in legislation which will redound to their harm. They point out that past legislation has frequently missed its mark in the same way. For example, the Taft-Hartley Act which, if it was designed to do anything, was designed to put an end to the closed shop, managed to accomplish this with respect to their unions, but it failed almost completely to accomplish the same objective among the unions in which the closed shop prevailed to the most extreme degree, namely, in the construction trades. There, as a matter of fact, the employers appear to be almost as anxious as the unions to maintain the old closed shop system intact.

Similarly, subjecting unions to the anti-trust laws may very well put some of the unions which operate over a wide area, such as the steel workers, into a straitjacket while leaving the teamsters free to continue in their old way in the local situations in which they seem to specialize. What appears to be needed most at the moment is for employers to come forward and provide these various investigating bodies with accurate information on the actual practices which prevail. Just as in the Taft-Hartley Act situation, it is

(*Continued on page* 77)

These Crushers Give Double Service!



Williams Heavy Duty Reversible Hammer Mill for top output of crushed stone, clay, shale and all other heavy abrasive materials

WILLIAMS *Reversible* HAMMER MILLS

Double service from hammers, breaker plates and grate bars—maintenance reduced to half or less—downtime cut as much as 50%—these are only a few of the money-making, time-saving features of Williams Reversible Hammer Mills.

Operation either clockwise or counter-clockwise with a reversible motor promises that hammers and other internal parts will work twice as long without even opening the machine. Slower and more even wear results in continuous peak output of a uniformly high quality product while, at the same time, demanding the very minimum of time and expense in the replacement of worn parts.

Reversible manganese breaker plates also give twice the usual length of service, and are adjustable to compensate for hammer wear to maintain original close settings.

For the most in real operating economy, high production and top quality products, get the facts about Williams Reversible Hammer Mills. *Write For Catalog.*

Open view of Reversible Hammer Mill. Note heavy shock-proof, wear-resistant manganese steel liners and breaker plates, and the rugged, reinforced construction. Entire interior easily, quickly accessible. Rotor removable without disturbing feeder or feed chute.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
802 ST. LOUIS AVE. St. Louis 6, Mo.

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CRUSHERS GRINDERS SHREDDERS

Impactors Helix-Seal Mills Roller Mills Air Separators Vibrating Screens Feeders

OLDEST AND LARGEST MANUFACTURER OF HAMMER MILLS IN THE WORLD

Construction Materials Studied During A.S.T.M. Committee Week

DURING the annual A.S.T.M. Committee Week, held this year at the Benjamin Franklin Hotel, Philadelphia, Pa., from February 4-8, nearly 300 meetings were held by 35 of the association's technical committees.

More than 1,300 members registered during the five days of meetings, for committee work directed toward correlating and discussing the great amount of research on which A.S.T.M. specifications and test methods are based.

Revised tentatives and standards were put into final shape for recommendation to the society for adoption at its annual meeting at Atlantic City in June of this year. In most cases, committee actions will be submitted to letter ballot of the committee prior to submittal for action in June.

During the Committee Week the Philadelphia district council acted as host for dinner and entertainment at the Franklin Institute. More than 200 attended the function, which was presided over by Tinius Olsen II, Tinius Olsen Testing Machine Co., district chairman. In addition to Mr. Olsen, district officers include A. H. Kidder, Philadelphia Electric Co., and L. P. Mains, Drexel Institute, vice-chairmen; and W. J. McCoy, Lehigh Portland Cement Co., secretary.

Among the main technical committees which met in Philadelphia—many of which had numerous subcommittee sessions in addition to their main meetings—were the following: C-7 on Lime, C-8 on Refractories, C-11 on Gypsum, C-12 on Mortars for Unit Masonry, C-15 on Manufactured Masonry Units, C-16 on Thermal Insulating Materials, C-22 on Porcelain Enamel, C-23 on Sorptive Minerals Materials, and D-4 on Road and Paving Materials.

Among the actions taken by committee C-7 on Lime—which are subject to affirmation by letter ballot—were revisions to the Standard Methods of Sampling, Inspection, Packing, and Marking of Quicklime and Lime Products (C 50), and Standard Methods of Physical Testing of Quicklime and Hydrated Lime (C 110). These revisions were in the nature of refinement in procedure. A revision of the Specification for Quicklime and Hydrated Lime for Silica Brick Manufacture (C 49) was approved, with an additional method of test included.

Reflecting the necessity for standards for the new refractory products developed in recent years, a tentative classification for castables or refractory concretes was approved by committee C-8 on Refractory Materials.

It was reported that a co-operative study with the National Bureau of Standards on various types of furnaces for determining the pyrometric cone equivalent (P.C.E.) values of refractories is well under way. This study may lead to the selection of a single standard furnace and thus to more precision in the determination of these values.

The committee also reported that the editorial work for the 1957 edition of the *Manual of A.S.T.M. Standards on Refractory Materials* is practically complete and will probably be available this summer.

Aggregates for masonry grout were covered in new specifications accepted by committee C-12 on Mortars for Unit Masonry. This proposed specification includes both natural and manufactured sand used alone, or in combination with coarse aggregate in grout for reinforced masonry.

The present specification for mortar (C 370) is to be revised in order to avoid certain observed misuses: *i.e.*, field tests of mortar have been conducted and resulting test data have been referred to requirements of specification C 270. This is not the intent of the present specification, and the revision is proposed to clarify the situation.

Committee D-4 on Road and Paving Materials, whose work is particularly significant at this time in view of the national road program now getting under way, has a number of important subjects under consideration. Among these are the following: mechanical stability tests for designing bituminous mixtures, development of tests for the setting properties of bituminous materials, studying accelerated durability tests for bitumen, and the factors involved in the effects of water on bituminous coated aggregates.

The committee has also announced plans for two major symposiums to be presented in 1958 and 1959. Subject matter of these conferences will be the effect of water on bituminous coated aggregates, and the significance of tests and properties of road and paving materials.

General Portland Cement Company announces the appointment of DONALD E. REYSA as assistant manager, white cement sales, with headquarters in Chicago. For the last nine years he has been General Portland's Pacific Coast representative for Trinity white portland cements, with offices at Los Angeles. Before joining General Portland he was engaged in the sale of heavy construction equipment in southern California.

D. E. Reysa

D. L. Smith

Mr. Reysa will be succeeded in his former position by DONALD L. SMITH, who for several years has been sales representative of the United States Lime Products Corporation, Los Angeles. Both appointments were effective Feb. 1.

LESTER E. JORDAN has been appointed district engineer in charge of the Portland Cement Association's Philadelphia office, succeeding R. M. Reindollar Jr., who resigned to join a Baltimore, Md., engineering firm. As district engineer, Mr. Jordan will direct P.C.A. activities in Pennsylvania, under the overall supervision of M. J. McMillan, eastern regional manager, New York.

L. E. Jordan

Washington News

(*From page* 12)

out in the second half of 1956 as compared to the second half of 1955. This is a curious development in view of the improved profits picture toward the end of 1956. However, it will be no surprise to find another increase in cash dividends in the first half of 1957.

Profit Rate and the Budget

The relation between profits, tax revenue, and the budget becomes all the more important when it is recognized that the budget proposed by the President for the forthcoming fiscal year is the largest ever. When the annual budget message delivered in January showed the $72,000,000,000 figure for the fiscal year running from July 1, 1957, through June 30, 1958, it was met by surprise, even astonishment. Although brave words are being uttered by the Secretary of the Treasury that outlay should be cut down, and somewhat less brave words are being repeated by the Director of the Budget, it is unlikely that very much will occur to reduce the total figure. President Eisenhower has encouraged the various government agencies to do what they can, but it is clear that his heart is not in it.

If history is repeated, and there is no reason to believe that it will not be, before this budget finally clears all of the Congressional hurdles, it will be no surprise to the old Washington hands to discover that the final figure will be in excess of the $72.000,000,000 originally proposed. This is what almost always happens as a result of the activities of each of the various pressure groups and the ultimate requirements for a log-rolling exchange of favors so that the legislation can emerge.

A part of the hope for balancing this enormous budget came from the belief that corporate profits would rise substantially and accordingly the "take" from the corporate income tax would rise by an even greater proportion. Some optimists even permitted themselves to hope that the rise in corporate income would be sufficient to permit a small reduction in the corporate income tax. The virtual certainty, at this point, that while corporate income will go up, it will go up only by rather modest proportions, dashes any hope that the corporate income tax will be reduced this year. Here, too, the President appears to be more realistic than his associates.

From present indications, there is an actual possibility that the budget cannot be balanced. If this happens, this will involve the most serious inflationary threat. It is unlikely under these circumstances that any well-meaning entreaties to management and labor can be in any way effective. It is this possibility, more than anything else, which may lead to the necessity for direct control on wages and prices. Since most of the budget is used for defense activities in what has been called the "cold war," we are rapidly discovering that, in terms of economics, there is very little difference between a "cold" and a "hot" war.

Labor Developments

(*From page* 74)

unlikely that the labor unions will be able to suggest any legislation designed to correct the specific evils of which they are best aware. However, there is nothing to prevent employers, who know just about as much about the situation, from exercising their influence to secure legislation which will do them the most good.

This man is looking into your future

How does it look? Rosy? Free of cancer? You hope! But hoping isn't enough. Of every 6 Americans who get cancer this year, 3 will die because science still has no cure for them. It will take research . . . *lots* of research . . . to find that cure. And research, let's face it, takes money. Pitch in and help. Send a generous check . . . right now . . . to "Cancer" in care of your local Post Office.

American Cancer Society

"Hot Goods" Clause Held Unenforceable

A recent ruling by the U. S. Court of Appeals may be of special interest throughout the construction industries.

The labor agreement between the Carpenters Union and the contractor included a rather common "hot goods" clause, which provided that "only members of the . . . Brotherhood . . . shall be permitted to do carpenter work on any job," and that "no member shall use, handle, install, or erect any material produced or manufactured from wood that is not produced and manufactured by members of the . . . Brotherhood. . . ." In this case the contractor told the carpenters to erect doors which were purchased from an out-of-state manufacturer. The carpenters refused to do this work until they checked to discover whether the doors had been made by union or non-union labor. When their investigation revealed that the doors were in fact not made by members of their own union, they refused to install them. This, of course, resulted in a work stoppage.

The case first went before the National Labor Relations Board, which found the union guilty of engaging in a secondary boycott and violation of the law. They found that the union's instruction to construction workers not to handle non-union goods of an out-of-state manufacturer falls within the secondary boycott prohibition in the National Labor Relations Act. The out-of-state manufacturer whose goods were the object of the union's stand was the primary employer, and the local construction contractor whose employees were instructed not to handle the non-union goods was the secondary employer.

Although the union contract contained a "hot goods" clause, the union's order to workers to stop work upon non-union goods is a violation. The court pointed out that it is not a violation for the employer to agree voluntarily to abide by a "hot goods" provisions. But if the employer chooses not to abide by that provision, an attempt by the union through a work stoppage to compel such compliance under this set of circumstances is a violation of the law.

JAMES H. NEELAN has been appointed assistant director, advertising and public relations division, Universal Atlas Cement Company, New York, N. Y.

N.S.G.A. Convention

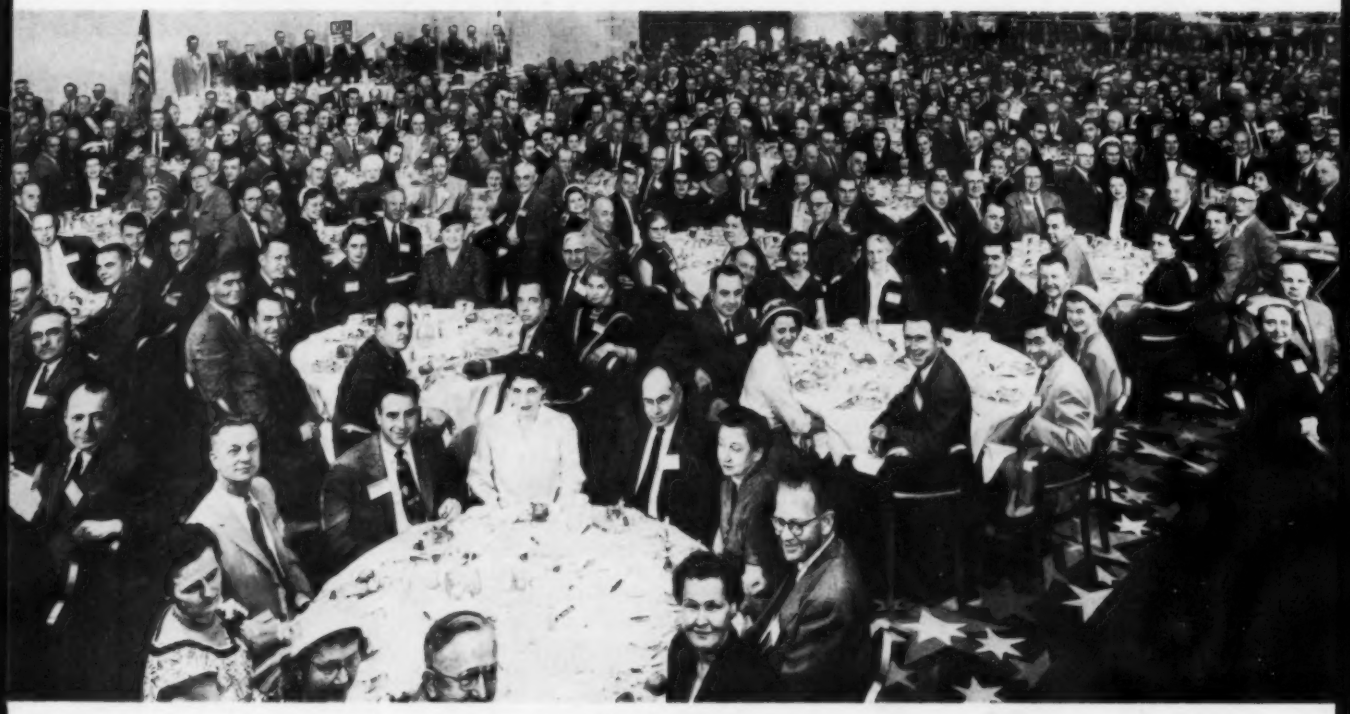
Draws Excellent Attendance

preparation for record demand of highway program stressed at Los Angeles

A group of the speakers at the joint public relations session (left to right): William Edward Hole, Greenville, Ohio; E. P. Gemmer, Houston, Tex.; Robert J. Hummel, Chicago, Ill.; E. K. Davison, Pittsburgh, Pa.; Ralph H. Anderson, Columbus, Ohio; Gary L. Marable, Fort Lauderdale, Fla.; and E. J. Nunan, Buffalo, N. Y.

Another ON THE SPOT Report

THE National Sand and Gravel Association and the National Ready Mixed Concrete Association on February 11 to 14, 1957, held their joint annual conventions at the Statler Hotel, Los Angeles, Calif. These were their 41st and 27th annual conventions, respectively. They were also among the most successful meetings in the histories of these groups, the combined attendance of over 2,000 setting a new record for a non-show year and proving again that meetings held at remote but attractive points will outdraw those at more central but less appealing places, provided that there is a good program. In no other year have more important subjects been discussed, and the plant tour was most interesting.



Some of the hundreds who attended the joint N.S.G.A.-N.R.M.C.A. luncheon at the recent conventions in Los Angeles.

The convention programs were, as usual, set up on the basis that those attending came primarily for business reasons. That this premise was sound was proved by the excellent attendance at all meetings and functions, in spite of the many competing local attractions. The meetings covered a wide variety of important subjects; but if there was a theme, it was the urgent necessity of these industries, particularly sand and gravel, to prepare for the additional demands of the huge highway program without any sacrifice of the quality of their products. In addition to the regular business proceedings the subjects presented which were of interest to sand and gravel producers included safety, business prospects, public relations, promotion, legal and political matters, taxes, insurance, depreciation, employee benefits, labor relations, percentage depletion, cost accounting, sales agreements, freight rates, production and operating methods and problems, technical and research data, and many other topics.

On Sunday, February 10, preceding the week of the conventions there was a joint meeting of the Manufacturers Division of N.S.G.A. and the new Exhibit Division of N.R.M.C.A. On Monday there were meetings of the executive committees and the board of directors of both associations, as well as of various committees, the first joint session of the convention, which was a conference on the operation of state and area associations, and a special meeting for sand and gravel companies using navigable waters. The actual opening sessions of both associations were on Tuesday morning, and after that there was no letup through Thursday afternoon, with two joint or individual meetings of the two groups every morn-

Roy E. Weaver, Lincoln Sand & Gravel Co., Lincoln, Ill., re-elected president of N.S.G.A.; A. H. Smith, Branchville, Md.; Heyward Green, Green Bros. Gravel Co., Jackson, Miss.

ing or afternoon, with one exception. The plant tour, all day Friday, took in some of the outstanding ready-mixed concrete and sand and gravel plants in the area. As usual, most evenings were left open for personal arrangements.

President's Address In his address of welcome to those attending, President Roy E. Weaver (Lincoln Sand & Gravel Co.) had nothing but good news to impart. The association is in excellent financial condition, it is growing in size and in standing, along with the industry, and has a promising future. Four new companies added in the last year bring the membership up to a record 261 companies, which represent about 70 percent of the total commercial production.

Mr. Weaver then pointed out that the industry also faces many problems, including higher taxes, increased demands by labor, increased costs of equipment and supplies, higher freight rates, etc. He warned that all these things must be kept in mind when making contracts with unions, or for materials. Automation wherever possible is a must. In his report Mr. Weaver also reviewed the more important accomplishments of the association for its members and the entire sand and gravel industry.

A. R. Shiely, J. L. Shiely Company, St. Paul, Minn., one of the speakers at the Monday session.

Election Of Officers All officers of N.S.G.A. were re-elected to serve a second year. They are: Roy E. Weaver (Lincoln Sand & Gravel Co.), president; E. Phil Gemmer (Texas Construction Material Co.), vice-president; and E. K. Davison (J. K. Davison & Bro.), secretary-treasurer. Also re-elected for another year were the other four members of the executive committee: Harold E. Bender, (Azusa Rock & Sand Co.), J. Paul Calhoun (Consolidated Gravel Co., Inc.), Fred P. Curtis (Lyman-Richey Sand & Gravel Corp.), and Ezra C. Knowlton (Utah Sand & Gravel Products Corp.). The four members at large of the board of directors, whose term expired February 12, 1957 were re-elected. They are: Robert S. Barneyback (Henry J. Kaiser Co.), Charles E. Brady (B. V. Hedrick Gravel & Sand Co.), J. Paul Calhoun, and Irving Crown (Material Service Corp.).

Below: Vincent P. Ahearn, executive secretary, N.S.G.A. and N.R.M.C.A., greets Senator Barry M. Goldwater, the speaker at the joint luncheon.

Coming Conventions The 1958 joint conventions of the N.S.G.A. and the N.R.M.C.A., with their biennial machinery exhibits, will be held in Chicago, Ill., February 9 to 13. Meetings will be at the Conrad Hilton Hotel and exhibits there and at the Coliseum. The 1959 conventions will be held February 15 to 19 at the Roosevelt Hotel, New Orleans, La. The 1960 conventions and exhibits will be in Chicago, probably on February 15 to 18, at the Conrad Hilton Hotel and the Coliseum. The 1966 convention, originally scheduled for the Fairmont Hotel, San Francisco, Calif., February 20 to 23, will be held instead in Miami, Fla. The switch was made because the 1960 directors meeting is to be in Pebble Beach, Calif., only a few months earlier. The 1963 convention, originally scheduled for Miami, January 14-17, will go to San Francisco. The 1962 joint conventions and exhibits are scheduled for the Conrad Hilton Hotel and the Coliseum in Chicago, probably February 12 to 16.

The 1957 semi-annual meetings of the two boards of directors will be held August 25 to 31 at the Manoir Richelieu, Murray Bay, Quebec. The 1958 meeting will be at the Sun Valley Lodge, Sun Valley, Idaho, September 17 to 21. The 1959 meetings will be September 27 to 30 at the Lake Placid Club, Lake Placid, N. Y. In 1960 they will be at the Del Monte Lodge, Pebble Beach, Calif., October 3 to 6.

Manufacturers Divisions A joint meeting of the Manufacturers Division of the N.S.G.A. and the Exhibit Division of N.R.M.C.A. was held on Sunday, February 10, preceding the conventions. The N.S.G.A. group re-elected all officers and directors. The officers are as follows: chairman, C. B. Laird (Eagle Iron Works); vice-chairmen: D. M. Blackburn (Hendrick Mfg. Co.), J. C. McLanahan (McLanahan & Stone Corp.), W. A. Rundquist (Pioneer Engineering

"We can't afford anything but CAT*-built machines"

Ask Oscar J. Mortensen, owner of a gravel pit near Cascade, Montana, why he has Caterpillar-built equipment and you'll get this plain answer:

"We've used Caterpillar-built equipment since 1940. We've had very little trouble on repairs and costs are lower than on any other equipment we could use. If they weren't, we wouldn't own it. We can't *afford* anything but Cat-built machines."

How about service? "We get service and parts in a hurry," Mr. Mortensen says, "and the parts aren't out of line on price either."

A Caterpillar D9 Tractor with No. 9S Bulldozer is shown above at the Mortensen pit. Here it is 'dozing raw gravel to the conveyor of a crushing plant that produces 1,000 cu. yd. of ½ to 2 inch track ballast per 8-hour day.

Pit owners everywhere are enthusiastic about the giant D9 Tractor. In repeated tests where accurate records have been kept, one D9 has outworked *two* bulldozers of the next size. Blade loads average 12 cu. yd. and are handled at higher speeds.

The D9 is heavy (35 tons with the No. 9S Blade) and powerful (320 HP at the flywheel)—yet one of the easiest of all tractors to operate because of its power-boosted controls and excellent visibility. Maintenance is low, too. The D9 is available with either torque converter or direct drive with oil clutch.

Everything about the D9 adds up to one thing: efficient production. Get all the facts from your Caterpillar Dealer; then try out the D9 in your pit. After you buy, depend on him for prompt service, parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

Works, Inc.), and E. D. Stearns (Barber-Greene Co.). In a brief report Mr. Laird pointed out that nine new members have been added, for a total of 92.

There was much discussion of the exhibits to be held at the 1958 conventions in Chicago. The exhibits in the Conrad Hilton Hotel and at the Coliseum will be open from 9:00 a.m. to 5:00 p.m. the first three days and from 9:00 a.m. to 1:00 p.m. on Thursday, the last day. The associations are leaving two afternoons open for visits to the exhibits. The 1958 joint annual meeting of the two manufacturers' groups will be held on Monday, February 9. A joint meeting of the two exhibit committees was announced for April 5, 1957, at the Conrad Hilton Hotel in Chicago.

Senator Goldwater The speaker at the annual joint luncheon of the two associations was Senator Barry Goldwater (Republican) of Arizona, who has had a rapid rise to political prominence. His first office was as a member of the Phoenix city council in 1949, and from there he went direct to the U. S. Senate. He fostered the right-to-work law in Arizona and is now a member of the new special Senate committee to investigate improper practices in labor and management groups. Mr. Goldwater commented on the growing political trend of the labor union heads which is putting too much power in a few hands. The latest cycle of inflation he blamed on the head of the steelworkers' union and on the heads of the big steel companies who gave in to demands without a struggle and then added the cost to their prices. The Senate committee, he said, is making a study which should result in controlling legislation fair to both sides. We are, said Mr. Goldwater, the only really free country on earth, but of the 51 labor union countries we are the only one which has compulsory unionism. Liberty is something we have fought and died for, but we are now letting it slide away.

Safety Awards A feature of the meeting was the awarding of safety trophies to the winners of the 1956 N.S.G.A. safety contest. The winners were: Class A (more than 500,000 tons per year output) —the Warner Co., Van Sciver plant, Philadelphia, Pa.; Class B (200,000 to 500,000 tons) — Lyman-Richey Sand & Gravel Corp., Cullom plant, Omaha, Nebr.; Class C (less than 200,000 tons)—American Aggregates Corp., Fort Jefferson plant, Greenville, Ohio. The *Rock Products* trophies were accepted by Irving Warner Jr. for the Warner Co.; Harold A. Koop for Lyman-Richey; and C. E. Glander for American Aggregates.

Ahearn's Report In his report to members of both associations, which was distributed prior to this meeting, Vincine P. Ahearn, executive secretary, said that both groups were in excellent financial condition and that work was progressing satisfactorily on many matters of interest to them. Future prospects he held to be good for both the sand and gravel and ready-mixed concrete industries. Construction volume in 1957 is expected to total $46.5 billion, about 5 percent over the 1956 record. He also described the new highway program and its good and bad features, as far as these two industries are concerned.

Mr. Ahearn pointed out that many producers of sand and gravel are not happy over the Bureau of Public Roads estimate that the commercial producer apparently will supply less than 50 percent of the requirements for aggregates for all highway construction in the next 13 years. The extent of their participation, he said, is up to them; and there is no reason why commercial producers shouldn't adapt themselves to economic realities and interest themselves in acquiring business outside their usual area through the use of portable or temporary plants.

The ready-mix producer, said Mr. Ahearn, will benefit from the new highway program in those cases where the Interstate Highway System touches the metropolitan area. He is admirably equipped to furnish concrete for highway structures of all kinds, and a large percentage of these will be in or near metropolitan areas.

Francis N. Hveem, materials and research engineer, California Division of Highways, whose subject was clean aggregates.

The plant tour included the 150-ft. deep pit of the Consolidated Rock Products Co. at Irwindale. Note the dragline and scraper used to trim the face of the pit. Approximately 15,500,000 tons of material has been dug here since 1948.

Association studies of cement supply showed that shortages early in the year were chiefly in the Middlewestern states and in Florida, and later mainly in the Middle West, but that the situation was much improved over 1955. Major increases in the capacity of the cement industry, he said, should insure an ample supply in 1957.

Mr. Ahearn also reported on the work the associations have done with respect to public relations, percentage depletion, labor relations, industrial radio, safety, freight rates, depreciation, cost accounting, group insurance, and the various governmental activities affecting these industries. Detailed reports on many of these were presented at the conventions; they are covered elsewhere in these reports.

Walker's Report Presenting a consolidated report on the engineering divisions of both associations to a joint meeting of the two boards of directors, Stanton Walker summarized the work of the engineering staff in its various activities.

Although the engineering group is basically the same as a year ago, Mr. Walker noted some important changes. In view of his increasing responsibility for the conduct of engineering work, Delmar L. Bloem has been named associate director of engineering for both associations, an advance from his former position as assistant director. Richard D. Gaynor, formerly assistant engineer, has been named associate engineer and laboratory supervisor, replacing James F. Shook, who resigned to accept an important position in the laboratory of the AASHO test road at Ottawa, Ill.

Research jointly sponsored by the two associations and conducted at the University of Maryland, continues to represent what Mr. Walker considers the most important activity since it affords support for almost all other work of the engineering division. The principal efforts there involve investigations on flexural strength of concrete and a cement testing program—both started a year ago, plus an aggregate evaluation program initiated this year.

With respect to the research fellowships authorized by these groups, it was noted that qualified applicants are hard to find. There is considerable competition from industry and the armed forces, and there were no research fellows in 1956. However, it was recommended that the two boards continue the authorization for the coming year.

Byron P. Weintz (Consolidated Rock Products Co., Los Angeles), who presided over one of the N.S.G.A. operating sessions.

Also on the subject of research, the engineering director stated that the two associations are identified with a recently developed joint highway research project at the University of Maryland. Organized as a tripartite effort with representation from the university, the state department of highways, and industry, the project is considered to have a great potential. Mr. Walker is current chairman of the advisory council which represents industry in this project. On this council are representatives of the Portland Cement Association, the Highway Research Board, the National Crushed Stone Association, the Asphalt Institute, the Bureau of Public Roads, N.S.G.A., and N.R.M.C.A.

Printed publications issued last year included four by N.S.G.A., six by N.R.M.C.A., and three joint papers. Nineteen technical information letters were distributed in the last year—nine by N.S.G.A. and ten by N.R.M.C.A. four of which were joint letters.

An important phase of the associations' engineering work, Mr. Walker pointed out, is that represented by technical committee activities, and it was recommended that such be expanded. A principal committee, representing both groups, is the one which governs activities of the joint research laboratory at the University of Maryland. The principal N.S.G.A. committee is that on operating problems, which organizes the technical programs for the annual meetings. N.R.M.C.A. has two very active committees, it was stated—one on standards for ready-mixed concrete, and the other on the cement testing program.

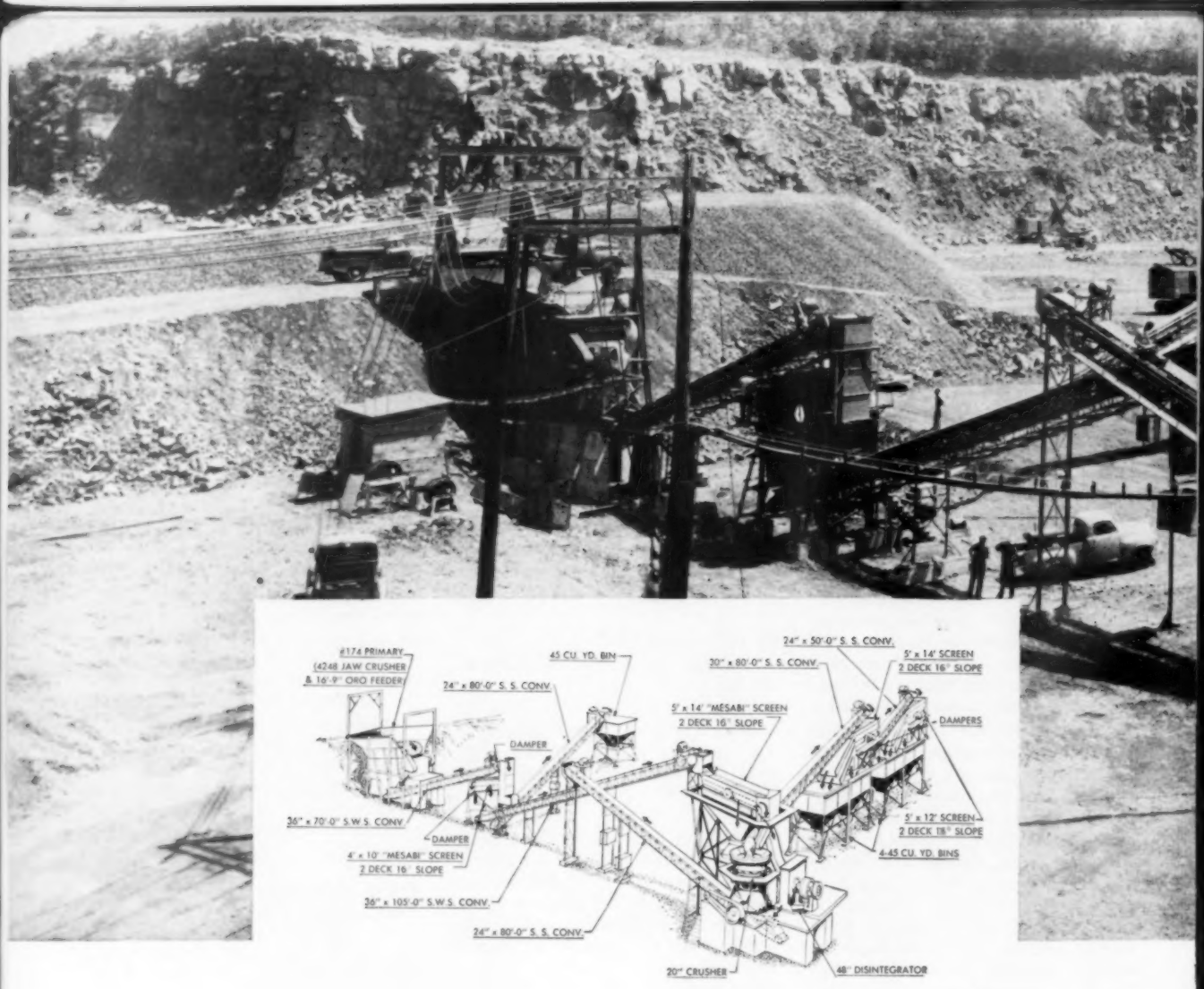
The two associations are also represented in technical committee work among such organizations as the A.S.T.M., A.C.I., Highway Research Board, and the American Railway Engineering Association.

Commenting on the annual short course, Mr. Walker noted that the attendance at those sessions last year was approximately 185—greater than in any other of the preceding ten courses. Further, Mr. Walker and Mr. Bloem attended or participated in eleven local short courses in various parts of the country.

As an appendix to Mr. Walker's report, a summary of the major projects of the joint research laboratory, prepared by Mr. Bloem, was made available to the members. Detailed descriptions of these activities are contained in a list of laboratory investigations which covers those conducted since the establishment of the laboratory in 1928. The complete list, which is available upon request, carries the titles of the series of tests carried out prior to 1945, while brief descriptions are provided on the scope and objectives of investigations conducted since that year.

Plant Tour The plant tour which has become one of the most popular features of these traveling conventions was held on Friday, February 15, following the convention. The several hundred producers who took advantage of this opportunity to see some of the most modern operations in this area were guests of the local producers and the associations. They were taken by bus, first to one of four ready-mix plants — the Alameda St. plant of the Consolidated Rock Products Co., the Vernon plant of the Western Concrete & Equipment Co., the new plant of the Blue Diamond Corp., or the new plant of the Livingston Rock & Gravel Co. All then gathered at the Irwindale sand and gravel plant of Consolidated, where they inspected the 150-ft. deep pit and 1,000-t.p.h. plant and enjoyed an excellent lunch. After lunch the producers had their choice of trips to the nearby Santa Anita Race track or to the ready-mix plant of E. Lockett & Son in Pasadena, where a cocktail party was held after the inspection tour.

Other Activities As usual at these conventions, the formal entertainment was limited, most of the evenings were left



Big quarry plant has needed flexibility for many sizes on turnpike job

Assured high production of aggregates for the North-South Pennsylvania Turnpike was the deciding factor in the purchase of a new quarry plant by one of the nation's largest quarrying concerns. General Crushed Stone Company of Easton, Pennsylvania, was operating a 30-year old plant in their quarry near White Haven, Pennsylvania. Although this plant was operating satisfactorily, it could not begin to fill the demand generated by the new turnpike market along with other increased construction demands in the area. It was decided to erect a new plant on the quarry floor a few hundred yards from the older one.

Advantages of new installation

This new plant, engineered by Pioneer Engineering Works, Inc., was installed during the summer of 1954. It has a capacity of 250 tons per hour which more than doubles the output of the quarry. And it produces 5 sizes of stone simultaneously. When both plants are operating, more than 4500 tons of specification aggregates can be produced each 10 hour day. Besides doubling output, the new plant materially increased the over-all efficiency of the quarry operations . . . mainly by introducing more flexibility. For example, each plant complements the other by readily permitting *production of a complete range of stone sizes.* The new plant takes care of the entire output of crusher-run stone, as well as a few basic sizes which do not require washing; the older plant turns out washed material and other aggregates ranging from No. 4 stone down to sand.

World's largest jaw crusher

Production center of the plant is the primary plant with its 4248 PIONEER overhead eccentric jaw crusher fed by a PIONEER-ORO feeder.

The jaw crusher has a 4 cubic yard crushing chamber. It features a number of PIONEER first developments such as self-aligning roller bearings . . . hydraulic adjusting mechanism . . . horizontally split base for easier handling . . . double wall box type base construction . . . reversible manganese steel jaw plates . . . and bearings which can be hydraulically expanded for easy removal.

Regulated feed boosts output

Regulated feeding is a "must" in an

efficient crushing plant such as the one at White Haven. Use of the PIONEER-ORO apron feeder in the primary crushing unit gives General Crushed Stone these 4 advantages:

(1) Even, continuous flow of material to the jaw crusher increases output by ending alternate choking and starving.

(2) Labor costs are lowered as only one man is required to control feeding.

(3) Actual running time increases, as stops for dislodging choked or bridged material in crusher are greatly reduced.

(4) Profits increase as steady, continuous input results in greater over-all plant efficiency, and greater output.

Construction features which contribute to long feeder life are important to General Crushed Stone. For example, parts of the PIONEER-ORO feeder such as pans, sprockets, and rollers are made of a high grade wear-resisting alloyed manganese cast steel. This remarkable steel actually fights back against wear. The more it's exposed to impact and abrasion, the harder and tougher it gets!

Other units increase flexibility

Four heavy duty double-deck screens for sizing the stone are used in the installation. The first is a 4′ x 10′ PIONEER Mesabi screen with 2½″ and 1″ openings. From it, crusher-run stone can be discharged to a lateral belt conveyor and transferred to a PIONEER 45 cu. yd. bin. When desirable, this screen can be entirely by-passed by a damper arrangement.

Oversize from the first screen can be conveyed by belt to a secondary Mesabi screen which produces 5″ minus and 3¾″ minus material. These products are then conveyed to two PIONEER finish screens mounted in series over four 45 cubic yard bins. Oversize from the top deck of the secondary screen is chuted back to an intermediate crusher, while bottom deck rejects are fed to a cage mill. Both crushers are operated in closed circuit with their products being fed back to the main delivery belt of the secondary Mesabi screen.

Five additional stone sizes obtained on finish screens

The first PIONEER finish screen, size 5′ x 14′ yields three stone sizes 3¾″ to 2½″, 2½″ to 1¼″ and minus 1¼″. The latter size is transferred to the second PIONEER finish screen, size 5′ x 12′, which is fitted with wire cloth having ½″ and No. 4½ mesh openings and produces 1½″ and ½″ materials and screenings.

Dampers give added flexibility

The first screen is fitted with a damper which enables rejects from each deck to be chuted to the same bin. The second is also equipped with a damper which permits discharge of all plus No. 4½ mesh stone to the same bin.

For more information on PIONEER crushing and screening equipment, write Pioneer Engineering Works, Inc., Minneapolis, Minnesota (subsidiary of Poor & Co., Chicago) or see nearest PIONEER Distributor.

Pioneer
Continuflo **EQUIPMENT**

open for sampling the wide variety of amusements available in the Los Angeles area. The one big show on the program, at the Moulin Rouge in Hollywood, was sold out. The house was packed, and all enjoyed an excellent dinner, top entertainment, and dancing. The only other organized activity was the "hospitality hour" the first two evenings, which gave producers a chance to contact each other and the machinery representatives. There was, of course, an excellent program of daytime entertainment for the ladies. This included teas, bridge, shopping, and, of course a tour of Hollywood, Santa Monica, Malibu, etc., to see the homes of movie stars and other sights, and tours of Pasadena and Disneyland. A number of members and their wives also took a post-convention trip to Hawaii.

Highway Program Ezra Knowlton (Utah Sand & Gravel Products Corp.) discussed *The Place of the Sand and Gravel Producer in the New Highway Program.* Mr. Knowlton, a former chief engineer of the Utah State Highway Department, has been active in the highway program since it was first proposed and has represented the association before Congressional committees. His reports at previous meetings of the association and the board were brought up to date at this time.

According to Mr. Knowlton, aggregate requirements comprise 95.4 percent of the total tonnage to be usedin the 13-year highway program. This low-cost commodity is widespread, but deposits vary greatly in quality and characteristics, requiring considerable processing in some cases to meet the desired specifications. Commercial producers operating stationary plants have met the demands for high-grade aggregates in their areas, but in the past have left the supplying of materials for secondary roads to highway contractors operating dry portable plants. These plants have been developed to a high degree of efficiency, he said, but have not in the past been required to produce the types of aggregates which will be required in large quantities in all areas for the highway program. The special processing which will be needed in many cases will require the use of much larger and improved portable plants and production knowhow that only the commercial producer now has. This is, said Mr. Knowlton, an opportunity for the industry which it must grasp or lose much of this and future business. Contractors will, he said, be so busy building roads that they will in most cases be glad to have someone else take over the production.

The demand for sand and gravel, said Mr. Knowlton, will double in the next 10 years to over 1,000,000,000 tons. Permanent plants should be enlarged with this in mind, and improved the meet the strictest specifications. Additional permanent plants will have to be built, and many portable plants must be added. Equipment needs will increase at least 50 percent. In 1955 the commercial operators produced about 50 percent of all aggregates, but this will drop to 43 percent or less unless steps are taken. Mr. Knowlton also emphasized that high-grade deposits near cities are dying out and those remaining must be protected from other land uses.

BUSINESS PROSPECTS

Washington Scene Highlight of the final joint session of the Los Angeles gathering was Mr. Ahearn's address, in which he analyzed the political climate for business in Washington at present and pointed out some of the effects it might have on the industry in general.

In Mr. Ahearn's opinion, there will be no tax reduction this year, either in personal, corporate, or excise taxes. Congress will doubtless make some brave efforts to reduce taxes for the small businessman and for people in the lower-income brackets, he stated, but added that there doesn't seem to be much basis now for believing that these efforts, however genuine, will be at all effective.

"Indeed," he pointed out, "there is disquieting evidence that the taxes levied by the Highway Revenue Act of 1956 will fall short of producing money to support the authorized spending. The Senate increased the interstate system to 41,000 miles, but did not change the levies worked out by the House for a 40,000-mile system, even though the additional 1,000 added somewhere around an additional billion dollars to the cost of the system.

"Furthermore, the tax levies were worked out before the House added the Davis-Bacon (wage determination) Act, which will cost an unexpected additional $3,000,000,000. Prices of steel, cement, and other highway materials have increased since the Act was passed; labor and administration costs have gone up substantially; and the cost of land has skyrocketed to a point where we may begin to regard land as the shortest thing of all when it comes to staking out a new interstate highway system."

Unless the taxes levied by the Highway Act produce a lot more money than is anticipated, Mr. Ahearn predicted that Congress may have to reach deeper into the pockets of the ordinary motorist and truck operator in order to foot the bill for the highway system. "Many states are presently unable to make up their share of the funds to help build the interstate system and the regular federal-aid system. They are searching desperately for more money, and perhaps some people don't even know that the states will eventually have to maintain the interstate system after it is built," explained Mr. Ahearn. "If the states just don't have the money to do this, and we are forced to maintain the interstate system in the next ten years as a federal undertaking, there will be a new and bigger tax bite—and all thoughts of tax reductions may have to be forgotten!"

Although painting a rather doleful budget and tax picture, Mr. Ahearn feels there is no cause to worry a great deal about any effort to scuttle the Taft-Hartley Act. In fact, if the unions don't watch out, he is of the opinion that the Act may be made sronger and not weaker. Repeal of T-H was never more than a slogan and, in his opinion, to the unions it has been simply a "gimmick" and a useful political argument. "Down in their hearts, union leaders know they will never get Taft-Hartley repeal, nor do they actually want it," he declared.

Touching briefly upon the antitrust field, Mr. Ahearn believes it quite likely that Congress will pass some kind of legislation which will require prior approval of proposed mergers by the Department of Justice. There is considerable support for such action, he revealed, because there is genuine concern about the impact of recent mergers on individuals and upon the country itself.

There are other bills of more or less interest to the businessman, like the Wage and Hour Law, legislation to establish control over employee pension and welfare plans, appropriations for federal public works other than highways, and a large number of bills which are designed to equalize competition among all shades and sizes of business. Another proposal reviewed by Mr. Ahearn will be an attempt to restore to the states their right to regulate labor

Left: A. H. Smith, Branchville, Md., and M. G. Kerr, American Aggregates Corp., Detroit.

Right: D. G. Schuster, Schuster Quality Conc. Co., Green Bay, Wis.; and J. Hummel, R. O. Webster, and William Ryan, all of Consumers Co., Chicago.

Left: M. N. Penny, Ready Mixed Concrete Co., Lawrence, Kans.; and H. Irving Rhine and Danvers Boardman, Bode Gravel Co., San Francisco.

Right: Arthur Johnson and P. J. Werner, Perkins Gravel Co., Sacramento, Calif.

the not so serious side—

disputes which progress to the point where strikes occur, or are threatened, a right taken away from them in what he called a "notorious example" of judicial lawmaking by the Supreme Court.

Public Works Nearly $650,000,000 will be spent in California this year as part of a 5-year public-construction program in which the state is attempting to balance the opportunities and the problems of its growing population. This was disclosed by Frank B. Durkee, California Director of Public Works, who addressed the joint session on Tuesday afternoon. He broke down the expected expenditures as follows:

$300,000,000 for elementary and high-school construction.

$220,000,000 for new highway and freeway construction.

$107,000,000 for hospitals, office buildings, and structures other than schools — plus another $20,000,000 for the University of California.

Not included in the road-building figures was approximately $244,000,000 for maintenance and right-of-way acquisition. "I know that California could use a lot more," said Mr. Durkee, "but we have got to realize that we cannot solve all our problems at one time." Adding to the prospects of gaining headway in road construction is the new federal highway program, he commented. Passage of the bill in its present form could assure California of $500,000,000 a year from the Federal Government by 1959.

The convening producers also heard a talk by Norris Poulson, mayor of Los Angeles, whose prescription of "construction and more construction in bewildering, incredible volume" is the city's answer to what he called "the rapidly expanding needs of our burgeoning population."

In contrast to the opinions expressed by Mr. Durkee, Mayor Poulson expressed gloom over the muddled traffic problems of Los Angeles. "Indications are that we shall need twice as many miles of concrete freeways before we have a system that can adequately handle the traffic generated in the city and its environs," he declared. Mr. Poulson disclosed that the city currently is spending between $40,000,000 and $50,000,000 on urgently-needed major city improvements, as well as $79,000,000 on a storm-drain program and a sewage modification and expansion project.

Ernest Loebbecke, president of the

The Mighty Mackinac...World's

Main cables being compacted by jacks and bound with steel bands. Catwalks are supported on five 2¼" Tiger Brand Wire Ropes which will be pre-stressed and used later for vertical suspenders.

Clamping main cable. Workman prepares to clamp a bundle of 340 wires into a strand. Thirty-seven strands will make up the completed cable, two feet in diameter.

Quick facts about the Mackinac Bridge

Owner: State of Michigan, Mackinac Bridge Authority, Prentiss M. Brown, Chairman

Designer: Dr. David B. Steinman

Substructure Contractor: Merritt-Chapman & Scott Corporation

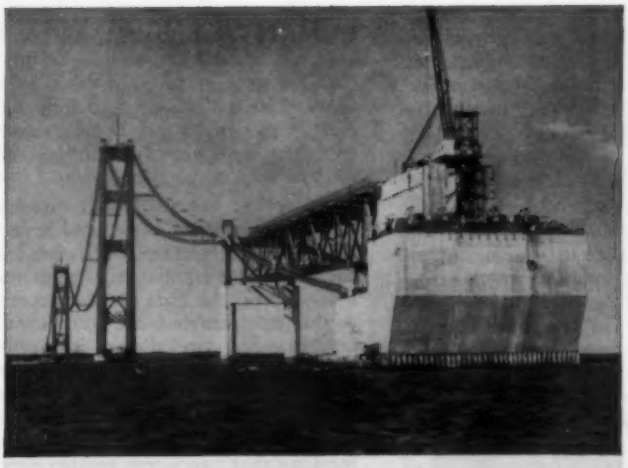
Superstructure Contractor: American Bridge Division, United States Steel

Wire Rope Manufacturer: American Steel & Wire Division, United States Steel

Total length: 26,444 feet • Suspension Bridge length: 8,614 ft. • Main Span length: 3,800 feet • Tower height above water: 552 feet • Total length cable wire: 41,000 miles • Total length wire rope suspenders: 125,000 feet. Wind resistance: 120 miles per hour • Approximate cost: 100 million dollars.

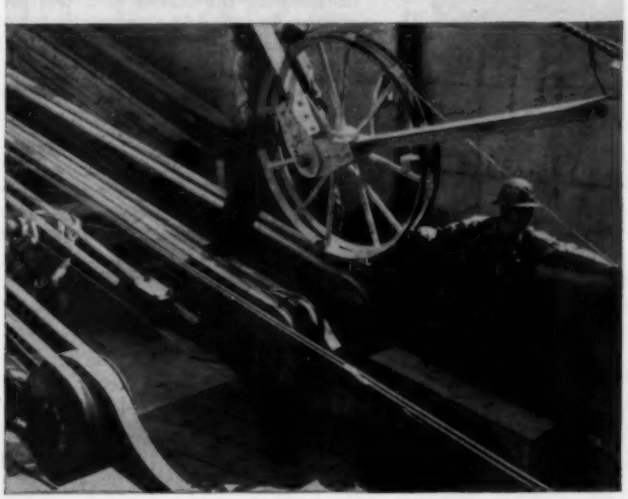
longest suspension bridge

...8,614 ft.



Solid anchorage for the main cables, high as a 10-story building and covering an area equal to about one-third of a football field.

Key step in cable spinning operation. Workmen putting cable wire loop on the spinning wheel and adjusting wire on the anchors. Each cable is spun by two wheels shuttling back and forth; each wheel pulls two loops or four wires per trip from one anchorage to the other.



The new Mackinac suspension bridge spanning the straits between Mackinaw City and St. Ignace, Michigan is 8,614 feet long including anchorages. This makes it the world's longest single suspension bridge. The over-all length of the bridge with approaches is 26,444 feet. (The San Francisco-Oakland Bay bridge has a total length of 8¼ miles, but is in reality two bridges with an island between.)

When completed as a four-lane artery, the Mackinac bridge will link Michigan's upper and lower peninsulas. Cars can cross in 10 to 12 minutes—6,000 of them per hour. Contrast this with 45 to 55 minutes on car ferries with a total capacity of 416 cars an hour.

The two main towers are as high as 46-story buildings—552 feet above water level. Over these, two huge suspension cables have been "spun" from 41,000 miles of American Tiger Brand Galvanized Bridge Wire. These cables are two feet in diameter and will support the bridge floor through vertical suspenders of 2¼-inch-diameter Tiger Brand Galvanized Bridge Rope. A total of 125,000 feet of suspender ropes will be used in the completed bridge. These will be pre-stressed to remove structural stretch.

The ability of American Steel and Wire to engineer and produce the Bridge Wire and Wire Rope for jobs of this magnitude is proof of the superior quality you can expect from any type of Tiger Brand Wire Rope you need. Write for our latest book.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL, GENERAL OFFICES: CLEVELAND, OHIO
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

UNITED STATES STEEL

Los Angeles Title Insurance & Trust Co., reporting on the country's economic outlook, cautioned against public panic over the big bugaboo of "tight money." While the national budget indicates a continued high level of government spending, he warned of a possible dip in the stock market by the end of the year. In his opinion, the number of housing starts may be off somewhat but he expects the dollar volume to remain at about the same level as in 1956 since more housing in the higher-cost brackets is planned by the builders.

PUBLIC RELATIONS, ZONING, LAND REHABILITATION

Committee Reports The growing importance and significance to both industries of good public relations dictated the reason for a combined session of both associations to discuss this subject. In this meeting, the chairman of the public relations committee of each group covered the program carried out so far by his association toward this goal. Ralph H. Anderson, Anderson Concrete Corporation, Columbus, Ohio, told of what has been done by the ready-mixed concrete group, and what members hope to accomplish in the future.

E. K. Davison, J. K. Davison & Bro., Pittsburgh, Pa., presented the case for the sand and gravel industry in establishing worthwhile public relations. These mainly include zoning and land rehabilitation, problems inseparably tied to and constituting the most important aspect of good public relations. He quoted pertinent paragraphs of the John Gregg zoning case in the Los Angeles area that resulted in the recognition by a municipal government that sand and gravel extraction is appropriate to the highest use of land. He added, however, that the producer also has obligations.

Mr. Davison related how the board of directors of the N.S.G.A., realizing these obligations to the public, in 1955 established a committee on public relations, prompted by Mr. Ahearn's reminders and warnings over a number of years that the industry faced serious problems. The board also established a committee on zoning and land rehabilitation. An association-wide survey in 1955 confirmed that the problems were of national concern to the whole industry.

Mr. Davison described several examples distributed to the membership by these committees, illustrating what they are trying to foster in the way of good public relations. He also told of future plans of the committees, and of the employment of a professional public relations counsel by the two associations. The association staff and this counsel will prepare in 1957 three publications dealing with good housekeeping, zoning and land rehabilitation, and the laws contributing to the orderly development of the industry along with competing land uses. Two other contemplated subjects — (1) the dwindling reserves of sand and gravel in the country's economy and (2) providing guidance in the troublesome trucking problem—will also be prepared. In all, Mr. Davison stated, the future work is an ambitious and expensive program, and will be underwritten by a substantial appropriation from the N.S.G.A.

Panel Discussion The final portion of the session on public relations consisted of a panel discussion of various aspects of the subject for the two industries. Panel members were William Edward Hole, American Aggregates Corporation, Greenville, Ohio, on zoning; Robert J. Hummel, Consumers Company, Chicago, Ill., on local press relations; Gary L. Marable, Ready Mix Concrete Company, Fort Lauderdale, Fla., on metropolitan areas; and E. J. Nunan, Buffalo Slag Company, Buffalo, N. Y., who spoke on legislative features of public relations.

Mr. Hole, chairman of the committee on zoning and land rehabilitation of N.S.G.A., had previously prepared two eloquent and concise reports setting forth the basic philosophy of zoning laws, the rights and obligations of the industry under these laws, and its obligations to the public welfare and convenience. In his presentation on the panel, he reviewed the high points of these papers in considerable detail. He stated that only by collective action at the national association level can we evolve an affirmative and dynamic program which will assure the continued functioning of the industry as an essential component of the nation's economy.

While the efforts of producers individually and locally are to be commended, no definite provision is being made whatsoever for the mining and processing of sand and gravel as a *matter of legal right*. In this, he added, suggested performance standards for the industry must deal unequivocally with the after-treatment of worked-over pit areas. We must affirmatively prove, Mr. Hole declared, that we sincerely intend to correct those practices which have given stimulus to the threatened destruction of our industry by the application of zoning techniques. Local political subdivisions should be limited by state statutes to zone only the surface use of land, and may not restrict or deny the right to remove from the land valuable natural resources such as sand and gravel.

Robert J. Hummel covered the importance of establishing and maintaining good relations with the local press, to combat the growing tendency on the part of newspapers to publicize stories from home owners regarding the alleged instances of dust, noise, and stream pollution emanating from sand and gravel workings and ready-mix plants. To accomplish this objective effectively requires that producers remain ever alert to the opportunity to be the recipient of good publicity.

The main objection, Mr. Hummel said, to having a property zoned for sand and gravel production, seems to be that "a big hole in the ground" would be left. It is good business to assure all, that through landscaping, planting of a row of seedlings and trees along the abutting highway, backsloping the shores of a wet pit eventually to form an attractive lake, would result in favorable newspaper publicity in most instances. He related the steps taken by his company to overcome adverse press relations prior to the opening of its Crystal Lake, Ill., plant. Included was the preparation of a complete story for the local newspaper headlined *Improved Lake to be Direct Result of Consumers Company Work*. The resultant publicity was indeed beneficial.

Mr. Marable admitted that while his operations were carried on in a bright, colorful, clean city, his company had the same problem as others in maintaining good public relations. He described the various ways through which favorable publicity has been attained: courteous drivers: truck units kept well painted and clean; plants continuously maintained with painting by a clean-up crew; lighted billboard advertising; truck signs carrying messages in behalf of civic undertakings; radio equipment on all units; human interest appeal in advertising civic needs or problems; and the installation of a Santa Claus atop the plant at Christmas.

He showed a series of slides pic-

turing these methods of influencing public opinion favorably and assured his listeners that each was an excellent investment in good will. While such promotion is vitally concerned with selling concrete, its direct effort is to sell the company to the general public, the banker, zoning board, police department, building department heads, and city, county, and state officials. The community responsibility is recognized by his company, and the public is told of this at every opportunity.

Mr. Nunan presented the legislative aspects of a public relations program, particularly as to the outstanding work done by his local association, Empire State Sand, Gravel and Ready Mixed Association, of which he is president. The hub of the association's contact with its legislators; he said, were meetings, both statewide and local area gatherings. It is at such meetings that personal contact with the men who must pass on legislation can best be developed; and these contacts can be used to the benefit of producers when unfavorable zoning or otherwise restrictive measures are considered.

Mr. Nunan stated that a commission has been appointed at the state level for control of the industry he represents. Its membership consists of men trained in the technical and engineering fields, capable of studying each problem and finding a solution which would be in the best interests of the public, but would permit the producers to operate in an economic manner. The subjects covered by separate committees within the commission include: zoning, vibration, topsoil removal, abandoned excavations and rehabilitation, noise, and dust control. The briefs prepared by each committee are now being studied, and following public hearings throughout the state, it is hoped that a favorable report will be presented to the legislature for action.

INSURANCE, GROUP BARGAINING, TAXATION, LEGISLATION, DEPRECIATION

Employee Benefits At the joint meeting of the boards of directors of the two associations, William Moore, chairman of the board of trustees of the group insurance plan, gave his report. There are 61 member companies subscribing to this plan, which is now out of debt to the associations and has its own surplus. Not only is participation increasing, but the coverage of the plan includes executive and supervisory personnel and various other

Right: Jim Marshall, Western Concrete & Equipment Co.; E. C. McNeill, Quinn-Robbins Co., Boise, Idaho; and J. M. Swan, Chaussee-Swan Gravel Co., Boise.

E. K. Davison, and E. J. Halter, J. K. Davison & Bro., Pittsburgh, Pa.; and Ray Tintary, Western Concrete & Equipment Co., Los Angeles.

conventioneers on tour

Virgil Owen, Pacific Cement and Aggregates Co., San Francisco, and John W. Murphy, Union Sand & Gravel Co., Spokane, Wash.

Paul J. Kremer, Buffalo Slag Company, and Don Grieco, Queen City Redi-Mix, both of Buffalo, N. Y.

benefits. Herbert Jahncke was elected a trustee of the plan, replacing Stanton Walker.

Mr. Moore also gave a progress report of the joint committee appointed to study the feasibility of a retirement plan for executives and employees of active member companies. Such a plan, it was pointed out, would have many advantages for companies of any size and could be made to cover those already having a plan of their own. A tentative plan has been approved by the committee and will be discussed at the joint board meeting in August.

Unemployment Insurance J. Richard Glade, executive vice-president of the Inter-Association Unemployment Insurance Committee, observed with some alarm the ever-increasing amounts employing organizations are being required to pay to support unemployment insurance benefits, the Social Security program, disability allowances, and supplementary plans for the benefit of workmen in times of idleness. While the Reuther proposal for a guaranteed annual wage may not have succeeded in fact, the results are approaching the Reuther goal as various beneficial programs are stepped up. Mr. Glade warned his listeners that company contributions to these various plans have risen so alarmingly that, for some, it may represent the difference between operating at a profit or at a loss. Management must be ever vigilant, said Mr. Glade, if it is to avoid being legislated out of business by union-sponsored moves in this direction. In the current session of the California Legislature, for example, he declared that no fewer than 160 bills have found their way into the legislative hopper, each affecting unemployment insurance.

Group Bargaining Organization by employers for effective group bargaining with the labor unions has become essential to survivorship, Richard W. Lund, an attorney with the firm of Latham & Watkins, Los Angeles, declared in his talk. United effort on the part of management, either as an incorporated trade group or on an independent industry-wide basis is the only sound, recognized means under the Taft-Hartley Act for legal, proper, and effective collective bargaining; and he cautioned that management's representatives can function properly only if they subscribe to the broad outlook of benefits to the industry in general; that selfish motives must be forgotten in the interest of industry harmony in arbitrating the issues involved.

Federal Tax Laws Speaking on *Consideration by Congress of Proposed Changes in the Federal Tax Laws,* John T. Sapienza, counsel for the associations, was emphatic in his belief that there will be few, if any, tax cuts this season. Rather, he said, the lawmakers and the Treasury Department are devoting much effort to plugging loopholes in the present tax laws in an attempt to increase revenues wherever possible.

Early in the present Congressional session, Washington looked hopefully for some form of tax relief but President Eisenhower's budget message quickly put a damper on any such hopes. At the same time, he predicted that many years may pass before any real tax-reduction program can be put into effect, although a severe business recession could bring this about.

Delivered Prices Charles A. Horsky, also a counsel for the associations, discussed current developments on the legality of meeting a competitor's lower delivered price for the same commodity. He used as an example a situation wherein two ready-mix producers in one community buy cement from two different mills, one local, the other 150 miles or so distant. The producer buying from the distant mill would be forced to pay up to 25 cents per bbl. more if the price differential were not permitted to be absorbed. This would without doubt force one of these producers out of business, and the situation would certainly not be at all protective for small business.

In defense, he said that the association is therefore vigorously opposing the Patman-Kefauver Bill and believes the bill is destined to defeat. The measure was designed to overcome the Supreme Court ruling that it was a complete defense to a charge of price discrimination under the Robinson-Patman Act for a seller to show that his price differential was made in good faith to meet a lawful and equally low competitor's price.

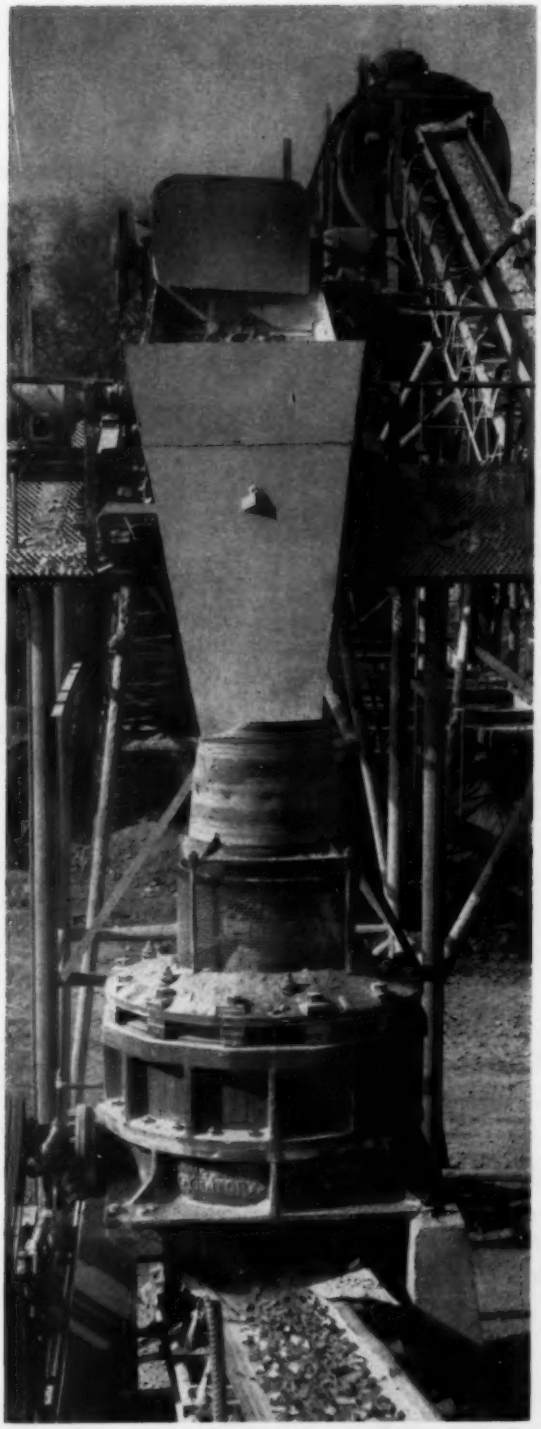
Natural Resource Regulations In opening his discussion on *The New Natural Resource Regulations of the Internal Revenue Service,* John T. Sapienza pointed out that the expanded highway program highlights the importance of tax relief and percentage depletion in providing funds for plant expansion to meet the added demand. The proposed regulations prepared by the Treasury Department required so many records and have met with so many protests that a revised set of regulations may be proposed. Even these, he said, will only be the Department's interpretation of the law. There is much confusion on how to establish a plant price, on the cutoff point for ordinary treatment processes, etc.

With regard to the aggregation of mineral properties, producers formerly had to figure each separately. Then the courts reversed this ruling if the tracts are a part of the same operating unit. To meet this requirement, said Mr. Sapienza, they must have common personnel, common facilities for production, common processing plant, and common storage facilities. He also said that not everyone can get a higher depletion allowance by aggregating.

Depreciation A review of pertinent points in the depreciation regulations issued by the Treasury Department last summer was presented by John W. Murphy, Union Sand and Gravel Co., Spokane, Wash. In his opinion, there are three main areas of significant change in the new regulations which were promulgated last year for administration of the 1954 Revenue Act. These are the useful life, salvage value, and retirements as such apply to depreciable assets.

With respect to the first, the new regulations state that the useful life is that period over which the asset may reasonably be expected to be useful to the taxpayer, and the latter's experience is the chief criterion of the depreciation rate to which he is entitled.

On the matter of salvage value, Mr. Murphy commented that this factor in depreciation calculations was less important in the past because depreciation was often computed on the inherent life of a machine, with the result that salvage was little more than scrap value. Salvage value becomes more important under the new regulations owing to the fact that this amount—determined at the time of acquisition—is an estimate of the realization upon sale or other disposition of an asset when it is no longer useful to the taxpayer. The salvage value may be changed during the life of an asset if the useful life has changed.



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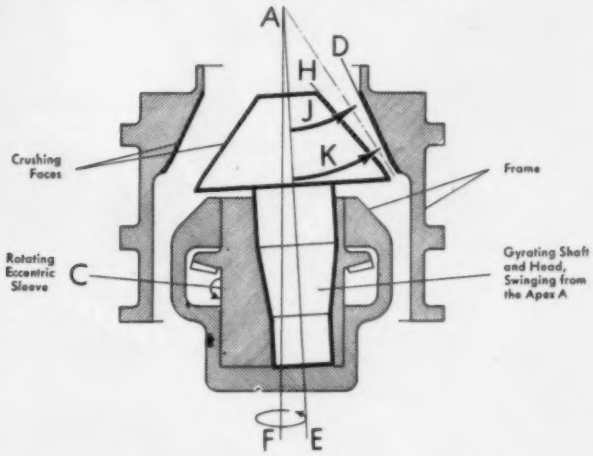

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Independent-Swing-and-Travel is available on 11 Link-Belt Speeder models. Eliminates shifting . . . saves 20-30 seconds each machine move

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Owners of machines equipped with *Independent Travel* report that the feature gives them higher percentage of work time spent in actual productive effort. What's more, they say it greatly decreases operator fatigue, keeps end-of-the-shift *output* at previously impossible high levels. In addition, because all operations are independent of each other (as shown in illustration at left) the machine maneuvers more readily in tight quarters and is able to move away from bank cave-ins in split seconds.

80 extra yards a day

Here's a conservative comparison of what happens when a Link-Belt Speeder 1-yard hoe with *Independent-Travel* is matched against an equal-sized ordinary hoe:

Digging to a depth of 6 feet, with each machine averaging a move every 7 feet, the Link-Belt Speeder with *Independent-Travel* eliminates shifting, producing an extra 80 to 90 yards, digging an added 120 lineal feet of trench per 8-hour shift because it has converted shifting time into work time!

Figured at 35 cents a yard, it earns an increased return of about $30 per shift or more than $600 extra each 20-day working month.

Cuts maintenance bills

The design of *Independent-Travel* calls for separate power trains, separate clutches, shafts, gears and bearings for swing and travel. As opposed to ordinary machines — which have but one power train to perform both functions and therefore have these components in almost constant use — the Link-Belt Speeder with *Independent-Travel* separates the functions . . . divides total wear over two power trains. Life of shafts, clutches, gears and bearings is practically doubled.

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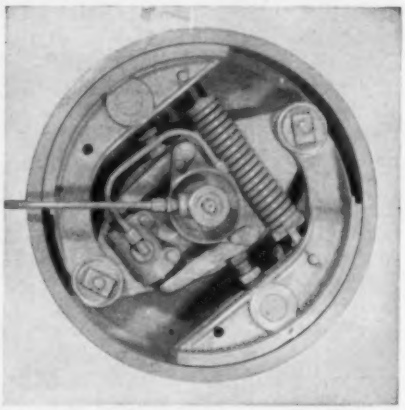
SIMULTANEOUS SWING AND TRAVEL — *Independent-Travel* eliminates shifting from swing to travel, from travel to swing and provides completely independent control. And fingertip-operated Speed-o-Matic — the only true power hydraulic system—makes every shovel-crane movement fast, easy, positive. With a flick of the wrist the operator puts his machine through its paces. There is little, if any, end-of-the-shift letdown.



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Under the regulations, depreciation may not be carried beyond a reasonable salvage figure. If the practice has been followed of taking high rates of depreciation, which leave little or no residual value, prior to sale or trade-in of equipment which still has substantial value, under the new regulations a taxpayer should lower the depreciation rate, or give effect to the high residual value by reducing the basis for depreciation. This would seem to make it more difficult for taxpayers to take capital gains on the sale of their used equipment.

Retirement of assets—the permanent withdrawal of depreciable property from use in trade or business or in the production of income—is the third main area in which a new approach has been taken, Mr. Murphy noted. Under the new regulations, the tax consequences of retirements depend on a number of factors, including the form of the transaction, the reason for retirement, the estimated useful life used by the taxpayer, the depreciation accounting method, etc.

Losses can be claimed and deducted, whether they are normal or abnormal retirements, where assets are permanently retired, and whether they are sold or put on the scrap pile. However, they may only be taken when the taxpayer can justify the reason, timing, and depreciation accounting.

Abnormal retirements—the withdrawal of an asset from operations earlier than could be foreseen—include the loss of use through such media as casualty or extraordinary obsolescence. These losses may be deducted in full without much question from the revenue service.

The taxpayer is permitted, under the new regulations, various methods of computing depreciation—straight line, declining balance, and sum-of-the-years-digits. The latter two provide accelerated depreciation during the early years of an asset's life. As previously, a producer may enter into written agreements with the Treasury Department as to depreciation rates; but once entered into, these agreements may not be changed.

An important point concerning the two accelerated depreciation methods is the fact that they may be used only for tangible property with an estimated useful life of three years or more, and that are new or have been put into first service since January 1, 1954. If used equipment is purchased, it may not be depreciated by either the declining balance or sum-of-the-years-digits methods.

Mr. Murphy made a few general recommendations on the above points. The use of one of the accelerated depreciation methods was suggested for most, if not all, depreciable assets. Such might well provide tax savings at a time when capital is needed for expansion.

It was also suggested that a closer look be taken at the useful lives put on various assets in view of company policies on repairs, replacements, and retirements; and, as far as practical, that depreciable assets be accounted for on an individual rather than group basis, due to potentially greater flexibility.

In conclusion, Mr. Murphy emphasized that the national economy requires expansion of the industry's facilities, and that a change in depreciation laws would permit expansion of the economy with the minimum of loss in tax revenue. If the possibility of such a change appears, it was strongly recommended that, individually and as an association, the members of the industry get behind such proposed legislation with all the means at their command.

Highway Revenue Act In discussing *The New and Increased Taxes Imposed by the Highway Revenue Act of 1956*, Kenneth E. Tobin Jr., associate executive secretary of the two associations, described the Federal-Aid Highway Act of 1956 as the most ambitious public works program ever undertaken. With other funds to be provided a total of about $50 billion will be spent for highway construction in the next 13 years. The Act also provides a total of $38.5 billion to be raised through new and existing highway user tax revenues over a 16-year period. These include taxes on gasoline and other motor fuels, tires, trucks, trailers, vehicle use, etc.

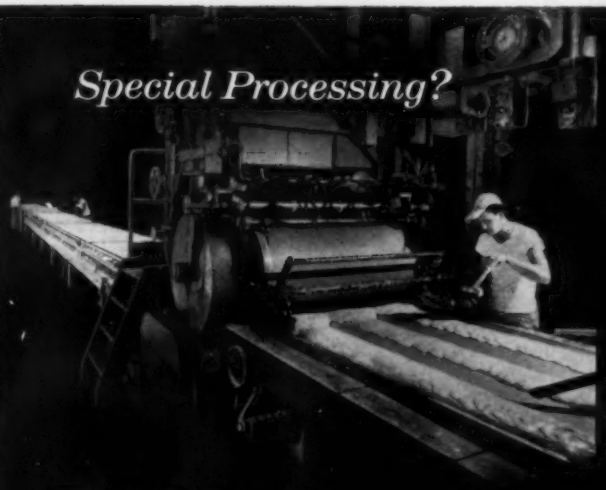
Each of the new or increased taxes, said Mr. Tobin, will be felt directly by the sand and gravel and ready-mixed concrete industries but the gasoline and motor vehicle use taxes will have the greatest effect on these industries. After July 1, 1956, any gasoline purchased for use other than as a fuel in a highway vehicle is exempt from the additional 1 cent federal gasoline tax, and there is a similar exemption for diesel and special motor fuels. He described in detail the procedure to be followed in obtaining these refunds.

The most important tax imposed by the Highway Revenue Act of 1956, and certainly the most confusing, according to Mr. Tobin, is the new Motor Vehicle Use Tax which provides for an annual payment of $1.50 per 1,000 lb. on highway vehicles with a gross weight of 26,000 lb. or more. The formula adopted by the Internal Revenue Service for payment of the tax is based on the actual unloaded weight of the vehicle and the number of axles. For example, a 2-axle truck used as a single unit, with an unloaded weight of 13,000 lb. or more, would be taxed on the basis of 27,000 lb. gross weight. If the unloaded weight is less than 13,000 lb., however, no tax is payable, even if payloads result in a gross weight of over 26,000 lb. He said that IRS Form 2290, which is provided for filing returns, establishes similar arbitrary gross weights for 3- or 4-axle trucks, truck-tractor combinations and buses. The subject is very complicated, and there are still a number of unsolved problems connected with it.

PRODUCTION, OPERATING PROBLEMS

Asphalt Stability *The Effects of Aggregate Characteristics on the Stability of Asphalt* Mixtures were described by B. A. Vallerga, managing engineer, Pacific Coast Division, Asphalt Institute, San Francisco, Calif. The three contributing factors to stability (resistance to deformation) are friction, cohesion, and inertia. The friction is either solid (between particles) or liquid (mass viscosity). Solid friction varies with roughness, pressure, and asphalt content. Liquid friction and cohesion (tensile strength) varies with viscosity, temperature, speed, gradation, density, and adhesion. Inertia is dependent on speed, density, and load.

Slides were used to illustrate various shapes of aggregates, particle surface textures, stress and strain curves, etc. According to Mr. Vallerga, the size of the particles has no effect on friction or strength, and aggregate shape is much less important than is generally believed. Surface roughness was shown to increase the angle of friction and the strength. Another conclusion based on analysis of test data, he said, is that surface roughness is the most important aggregate characteristic for stability of an asphalt mix. In the ensuing discussion it was pointed out that when an angular coarse aggregate is not obtainable some of it can be crushed and combined with the uncrushed coarse with good results.



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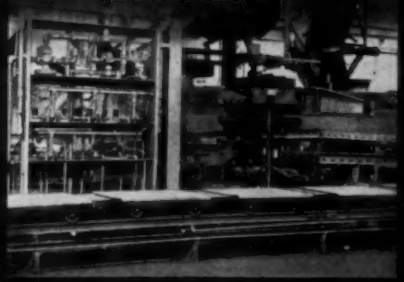

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Fractional Reblending In a paper entitled *Production of Specification Sand by Fractional Classification and Reblending,* I. L. Jennings, professional engineer (Consolidated Sand & Gravel, Ltd., Toronto, Canada), described the sand department of the plant operated by his company at West Paris, Ont. When built in 1952 this plant had a Dorr hydroseparator and a rake classifier. Since then the plant was enlarged and in 1954 the sand department was rebuilt in order to get better control. The existing equipment was rearranged and a grinding mill was added. The three sand fractions—coarse 5.03, medium 2.78, and fine 1.11 fineness modulus —are discharged separately to stockpiles over a reclaiming tunnel. Hardinge constant-weight feeders, controlled automatically, blend these fractions onto a reclaiming belt conveyor.

In answering questions, Mr. Jennings said that any desired gradations are made with very close control. A surplus of coarse and lack of fine material was the reason for adding the mill. Gravel is being used as the grinding medium but a change to steel is contemplated.

Clean Aggregate In discussing *Clean Aggregate for Concrete,* Francis N. Hveem, materials and research engineer, California Division of Highways, Sacramento, briefly reviewed the development of simple field tests of the quality of sand. The old sand equivalent test is now made with calcium chloride in about 20 minutes. The friction feel of dry aggregates, he said, is no sure guide to its friction in the presence of asphalt, water or clay. The clay present as a fraction or as a coating in the sand is largely responsible for volume change in concrete and resultant cracking.

A film was then shown to illustrate a method of determining the quality of an aggregate by means of a "cleanness test." A graduated tube is filled with water and then the fine aggregate is added. After a 10-minute soaking period the tube is shaken vigorously and let stand for 20 minutes. The height of the material is measured, then a weighted rod is introduced and the depth to which it sinks is measured. The proportion between two measurements is the guide to quality. With manual shaking there was a 6 percent variation in the tests so a mechanical shaker was developed with the result that variations are now only 2 percent. According to Mr. Hveem, a similar but less accurate test has been developed for coarse aggregates. A paper presented at the A.C.I. meeting in 1956, he said, shows the correlation between the sand equivalent test and quality, and this was published in the February, 1957, issue of the A.C.I. Journal.

Deleterious Material A panel discussion described four different methods for removing soft and unsound particles from sand and gravel—heavy-media separation, jigs, impact-type eliminator, and a new beneficiation process. F. J. Lloyd, Jr. (Keystone Division, Dravo Corp., Pittsburgh, Pa.), described the heavy-media installation made on the company's dredge No. 9 in 1952. This installation uses media costing $1.80 per cwt. and consumes .55 lb. per ton of product; the total processing cost is 15.1 cents per ton. As there is considerable coal in the material the specific gravity is held at 2.2 to 2.3. At another installation where lightweight shale is the problem a specific gravity of 2.38 to 2.40 is used. In the discussion of this method it was pointed out that while ferrosilicon heavy media costs $132 per ton, compared to $32 for magnetite, loss can be held to 0.2 lb. per ton or 1.3 cents.

The use of jigs to get rid of less than 1 percent of lignite was described by J. Henry Law (Western Indiana Gravel Co., Lafayette, Ind.). This material occurs in one deposit and affects only the concrete sand, particularly in the ⅛- to 3/16-in. range. A Meckum jig was installed and this solved that part of the problem. It was then found that the 3/16- to 5/16-in. material also contained some lignite and a second jig was installed which did the job satisfactorily. These jigs also removed a small amount of soft stone which had passed visual inspection. Each of the jigs is fed at the rate of 25 to 35 t.p.h.

The experience of the Consolidated Rock Products Co., Los Angeles, Calif., with the elimination of soft stone and other deleterious materials was described by Ronald C. Griffin. At one plant, he said, an impact-type soft stone eliminator did a good job but there was too much breakage of the good stone. Cylindrical scrubbers were used at two plants but at one of them was unable to entirely clean the material which is all clay coated. Various other types of scrubbers have been and are being used with varying degrees of success.

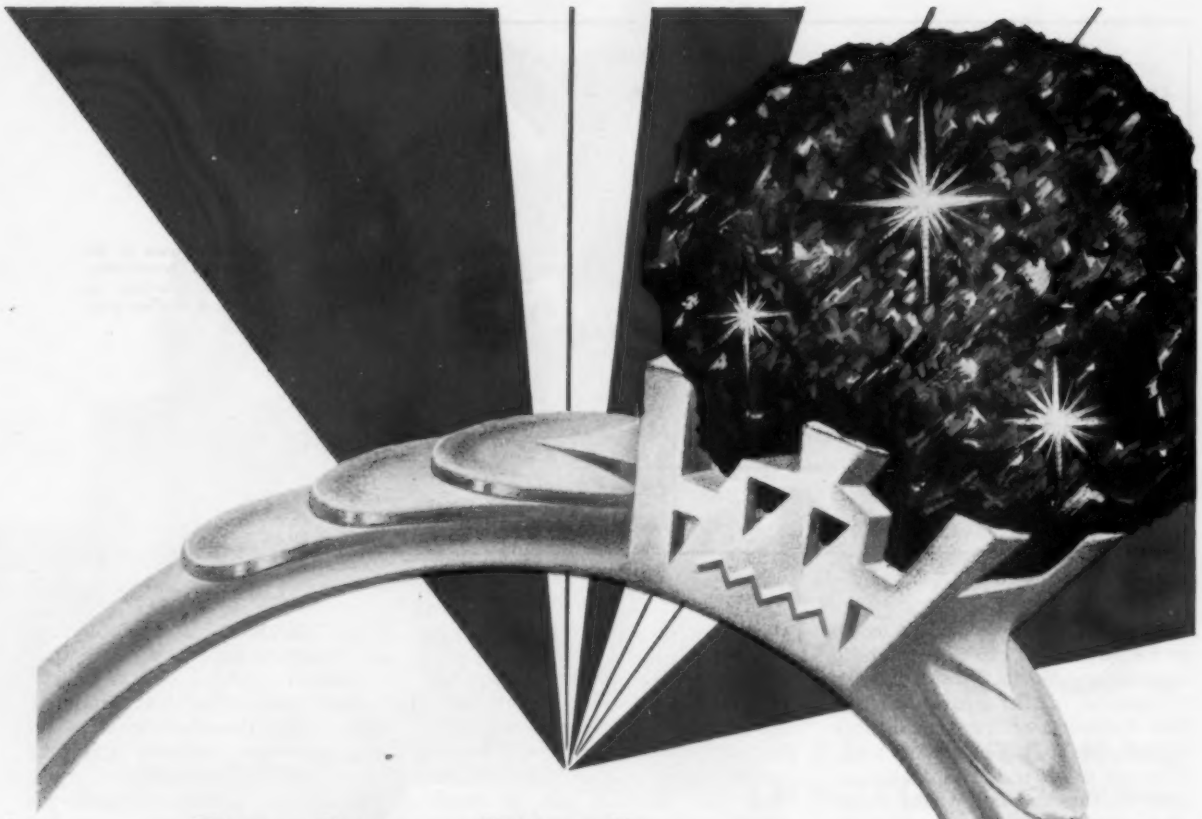
Paul J. Wolfert (Construction Equipment Division, Blaw-Knox Co., Pittsburgh, Pa.) described that company's new process for gravel beneficiation by elastic fractionation. "This is a new procedure for the separation of soft and non-durable particles from washed naturally occurring gravels," he explained, "leaving the sound hard stones for use as coarse aggregates and removing such deleterious particles as ochre, shale, sandstone, chalky limestone, clay balls, iron nuts and ferruginous material, schists, partially disintegrated stones and the like. The process is the result of several years of carefully conducted research and development work.

"The process makes use of the fact that the soft deleterious materials have elastic properties widely different from the hard sound stones. Energy is applied to the stones by elevating them and delivering them in a controlled manner from the lip of a vibratory feeder so that they drop in the required pattern onto the surface of a massive inclined hardened abrasion - and - impact-resistant alloy steel plate.

"The bounce of the stones depends on the elastic properties of the material and on the shape of the stones. The hard stones of any given gravel will respond in such manner as to give a characteristic distribution curve. The soft stones will also respond to give a characteristic but quite different distribution curve. Reference to the diagram (see page 100) shows that the bouncing stones are collected in three (3) compartments. The compartments are separated by easily adjustable dividers. The divider furthest from the impact plate is set at a distance from the plate such that the stones collecting in the far compartment will comprise the product of the desired composition; as, for example, an aggregate composed of 9 percent by weight of hard stones and 1 percent by weight of soft stones.

"The material collecting in the compartment closest to the impact plate will be predominantly soft stones and comprise the "discard" from the stage. The material collecting in the middle compartment will be a mixture of hard and soft stones. This material is continuously cycled back to the feed, and thus again dropped onto the impact plate.

"The net result of the operation of the first stage is the production of beneficiated product and a discard. The discard from the first stage still contains too large a percentage of



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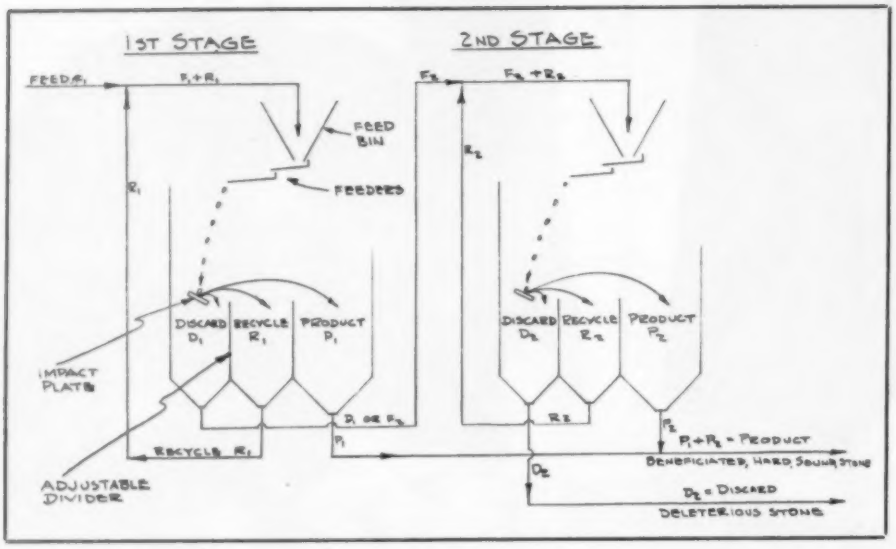

Flow diagram of the gravel beneficiation plant described by Paul J. Wolfert in his talk.

hard stones to be rejected. To recover the larger part of the sound hard stones, the first-stage discard is fed to a second, smaller separating stage. The operation of the second stage is analogous to that of the first stage. The net result is the separation of most of the remaining hard stones as a second stage product and the production of a discard material rich in the soft deleterious stones.

"Feed material may be such as to contain 3.0 to 20.0 percent or even more of soft deleterious stones. The beneficiated product can be made to contain any desired or required percentage of deleterious soft stones as, for example, a few tenths of one percent by weight up to four or five percent. The results actually obtained depend on the chosen setting of the dividers of the stages. The setting of these dividers determines the results obtained with mathematical precision.

"Elastic fractionation cannot be applied to crushed material. Crushing not only fragments the stones, but cracks the fragments. The result is a loss of resilience because the forces resulting from impact are not effectively transmitted across cracks in the material.

"Elastic fractionation is applied to well-washed naturally occurring pebbles graded from No. 4 up to a maximum of 2½ to 3 in. The pit-run or dredged material should be washed and screened in the conventional manner. The pebbles so produced would be conveyed to the beneficiation plant. The beneficiated product would be screened and lightly washed to produce beneficiated aggregates of the required size grading.

"The oversize material from the original washing and screening operations can be beneficiated in a separate unit designed to handle stones up to 5- or 6-in. size. However, the large size material can be hand-picked at reasonable cost to reduce the soft stone content sufficiently so that the crushed material made from the oversize stones will meet specifications."

In the ensuing discussion Stanton Walker pointed out that every known method of removing deleterious materials has its limitations. Heavy media will take out only light weight particles, impact type eliminators tend to break some of the good stone, and elastic fractionation takes out only the non-elastic materials but not such things as chert.

COST ACCOUNTING, SALES AGREEMENTS, FREIGHT RATES

Cost Accounting A report was made by Paul J. Kremer, chairman of the Joint Committee on Cost Accounting, on the cost accounting manuals recently completed and distributed to the memberships of both associations. These cover sand and gravel land operations, sand and gravel marine operations, and ready-mixed concrete. Mr. Kremer pointed out that each of the four other members of the committee is the comptroller of his company and that the manuals have been reviewed by the Comptrollers Institute of America and by other experts. They reflect all of the latest accounting developments but are written so that no expert help is needed to make use of them.

Each member of the committee then briefly described some of his own accounting methods. According to one member the sand and gravel division has always charged the ready-mix division actual cost but this has some disadvantages. It is planned to start charging the same price given dealers.

Another member said that his firm sets up both operating and sales budgets and can always tell when anything gets out of line. Good clean property records are necessary for depreciation purposes and for determining fire coverage. Each year, he said, values are adjusted on a basis set up by a large appraisal company. Efforts to achieve economies are spurred by paying each plant superintendent $10 to attend a monthly meeting of the board of directors.

Mr. Ahearn pointed out that these four experts donated their time and their companies paid their expenses in getting up these manuals. As a token of appreciation a nice leather portfolio was presented to each member of the committee. In addition to Mr. Kremer the committee consists of: J. M. Criswell (Warner Co.), Eugene J. Halter (J. K. Davison & Bro.), Henry H. Kerwin (Eastern Rock Products, Inc.), and J. H. Reid (Standard Paving & Materials Ltd.).

Sales Agreements In introducing his report on *Proposed Standard Clause for Sales Agreement in the Sand and*

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Gravel Industry, Charles E. Brady (Material Sales Co., Salisbury, N. C.) said that his committee had first circularized producers and then spent two years working up this information. A sales agreement is a contract between buyer and seller and should be so worded as to avoid any misunderstanding and resulting controversy. It is, he said, surprising how many sand and gravel companes, and not always the smaller ones, use no standard quotation or sales contract form. Mr. Brady then described the commonly used quotation form which becomes a sales agreement when signed by both parties. He mentioned each of the many specifications which should be included in such a form and explained in detail why they are necessary.

Freight Rates *The Sand and Gravel Case Against Railroad Rate Increases* was stated by Charles A. Horsky, counsel for N.S.G.A. He said that the current ExParte 206, requesting an across-the-board increase, is the latest of six rate increase applications brought before the ICC since World War II. In the first five cases they were given what they asked for. There is no reason to think that they won't get it this time or that this will be the last one. During this period, said Mr. Horsky, railroad wages have gone from $0.91 to $2.11 per hour, and fuel and all other costs have doubled or tripled, all increasing more rapidly than the income of the railroads. The ICC, he said, checks to see that the railroads operate efficiently but is sold on the justification of further increases.

The reason for N.S.G.A. appearing in this case, said Mr. Horsky, is because of the feeling in the industry that an indiscriminate across-the-board increase is unfair to sand and gravel for the following reasons:

1. Sand and gravel is a low value, short haul commodity and transportation is a large part of its price;
2. Deposits are relatively widely dispersed and high transportation costs will require the opening of new plants;
3. There are easy alternative methods of transportation—truck and water.

It was pointed out to the ICC that in the period from 1946 through 1955 the production of the industry increased 120 percent, while the total railroad and truck shipments increased 18 percent and 210 percent, respectively. In other words, the railroads are pricing themselves out of participation in the growth of this industry. In a recent statement N.S.G.A. asked the ICC to withhold its decision for a year so that data could be compiled to prove that such an increase would actually cut the railroads' income.

STATE AND AREA ASSOCIATIONS

In a combined session of both associations, at which H. G. Feraud, executive secretary of the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association, was the presiding officer, five papers were presented, each dealing with a phase of the subject carried on at the local levels by state or area associations. The functions of these associations were explained by Mr. Feraud.

Labor Negotiations J. C. Moran, secretary of the Ready-Mixed Concrete Association of Metropolitan Pittsburgh, spoke first on *Labor Negotiations on Area Association Level as Carried on in Pittsburgh.* He first briefly outlined the labor contract history of the association since its inception in 1937, in which time only two serious shutdowns due to labor troubles were experienced. He felt that this was some sort of record in that Pittsburgh is a much unionized city, and that they were fortunate to have a labor committee appointed by the N.R.M.C.A. board, of men who are qualified to effect a fair contract with the various unions, representing laborers and teamsters union members.

In the light of subsequent contracts signed by others with the steel workers union, Mr. Moran feels that the agreements reached by the ready mixed concrete producers with this union were satisfactory. A pension plan was included, consisting of payment of 5 cents per hour, with a maximum of $2 per week per employee, to go into effect in May, 1957. He feels that labor negotiation today are on a different plane than in the past, because both parties are smarter today. Both must recognize, the same goal, he said—growing profitable business, which provides income for owners and good wages and conditions for the employees. He urged that all producers properly prepare themselves — as the union negotiators prepare — prior to future meetings, if they are to survive in future negotiations for counteracting labor's demands.

Technical Committees Byron P. Weintz of Consolidated Rock Products Company, Los Angeles, chairman of the technical committee of the two California associations, spoke on *The Value of A Technical Committee in State and Local Assosciations.* He answered the question the subject invited — specifically, to whom is it of value, and how much? — by stating that it must satisfy the customers and the producers alike, but that the degree of value is difficult to pin down.

Mr. Weintz briefly described the organization of the technical committee, composed of nine members from seven companies, six of which produce both sand and gravel as well as ready-mixed concrete. He underlined the functions of any technical committee to help establish and maintain practical and reasonable specifications which all can live with, including the consumer, inspector, builder, and producer. If this basis is maintained, economies will result for all parties, especially from standardization of aggregate graduations.

He said that a great amount of effort has been made to convince specifying agencies that it is good economy to write specifications around local materials whenever possible. Another value of a technical committee is its work on quality control, applying both to bulk aggregates and ready mixed concrete. In this work, new methods of checking and controlling quality are being developed, especially where the support of commercial testing laboratories is relied on. Other assignments of a committee include the creation of a market for surplus products; efforts directed toward public officials, engineers, and contractors, to use materials; and the personal contact with specification writers, to attain full co-operation with such officials.

Short Courses *Organization and Conduct of Short Courses in State and Area Associations,* a paper prepared by Paul Lenchuk, executive secretary of the Florida Concrete and Products Association, was read by Paul R. Smith, secretary, Empire State Sand, Gravel and Ready Mix Association, Buffalo, N. Y., in Mr. Lenchuk's absence. He confined his remarks mainly to explaining how that association solved the problem of answering the question: "What will I be getting for my dues which will benefit my company directly?"

First, many types of educational programs were studied, and a decision was made that the best method

(Continued on page 168)

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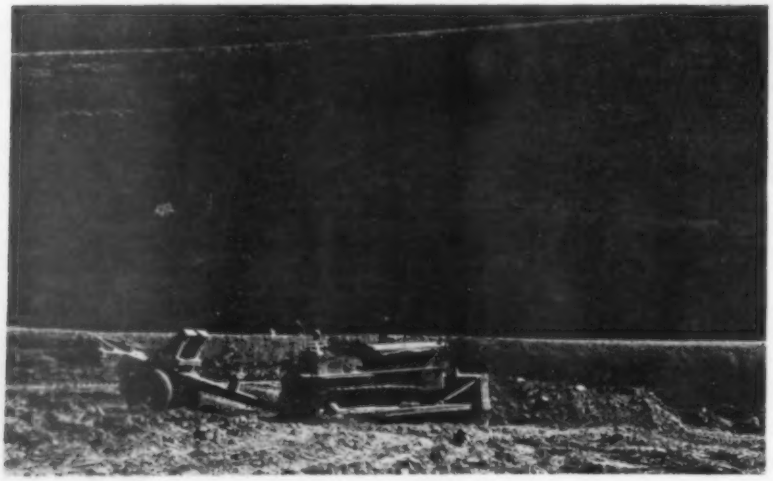
20 Mule Team Only a Memory—

But Borax Production Goes On

At the Pacific Coast Borax and Chemical Corporations open pit operation near Boron, Calif., benches 50 ft. wide are cut every 50 ft. with a ½ to 1 slope in alluvium and ¾ to 1 in soft shale. Ore benches will also be 50 ft. and will be shovel sloped. The overall pit slope will be 1.4 to 1.



A tractor equipped with a ripper dozes rock and caliche against the side of a bench, where it will be graded eventually to the correct slope.

Another P&Q Exclusive

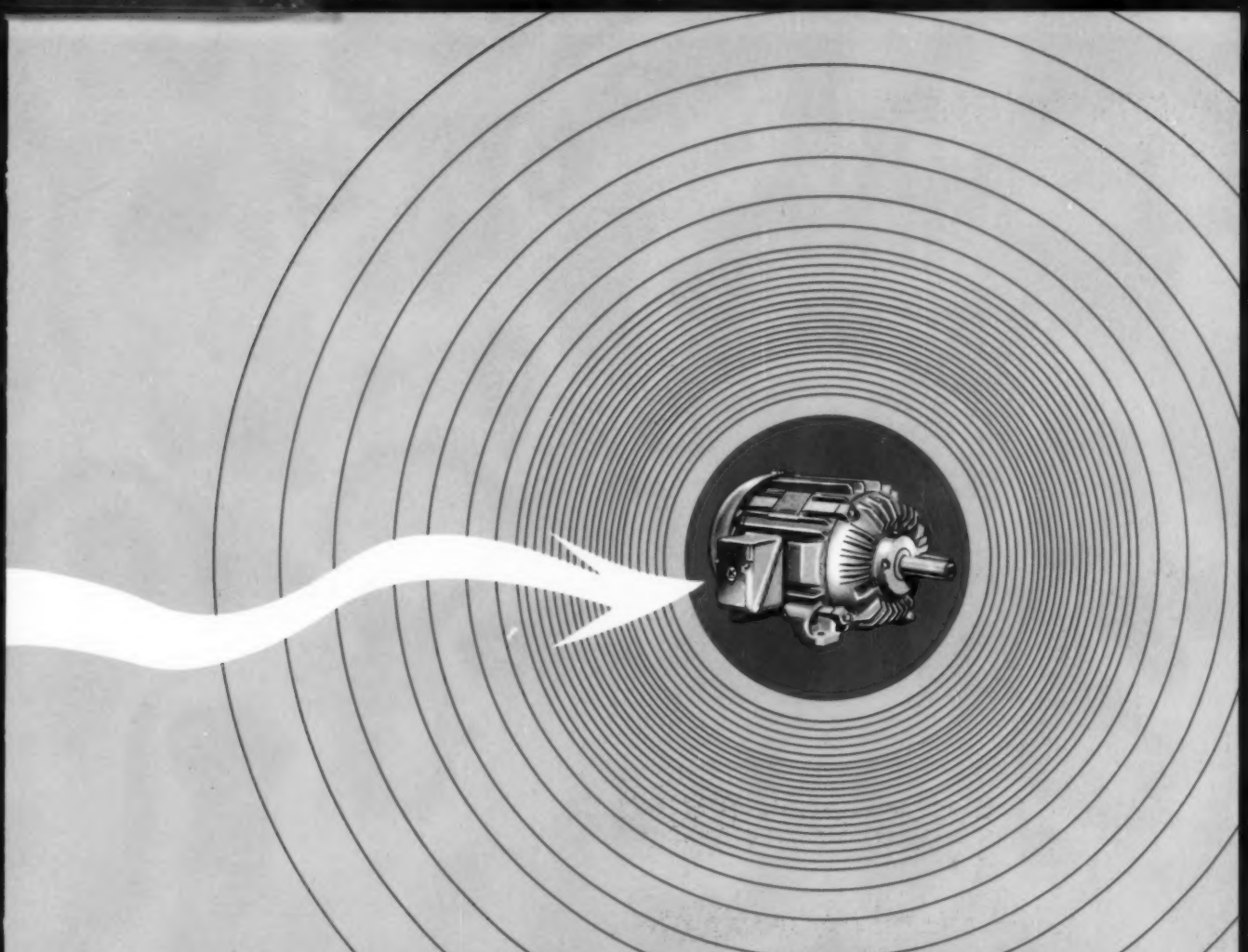
THE famous 20 Mule Team wagon trains of Pacific Coast Borax Company that lumbered across Death Valley are just a memory of a bygone day. But Pacific Coast Borax, now a division of United States Borax and Chemical Corporation, has lasted through the years, to become a modern, well-equipped enterprise. Latest development at this famous company is its conversion from deep mining to an open pit at its Boron, Calif., mines in the Mojave Desert.

For a number of years, officials of the company realized that an open pit would have several advantages over the existing room-and-pillar deep mines. Underground costs were in order, but recovery was low due to the large pillars required and the ore that had to be left in both the footwall and hanging wall to support the weak shales surrounding the deposit. At the time, however, the existing mill at Boron was unsuitable for concentrating the lower grade intermediate beds that would be mined from an open pit. A refinery existed at Wilmington, Calif., but freight and other costs from Boron were prohibitive.

Due to obsolescence and increased demand, additional concentrating and refining facilities became necessary. It was then decided to build new plant facilities at Boron, thus making possible the changeover to open-pit mining. This new refinery is currently under construction.

The Boron ore, largest deposit of sodium borate discovered in the world to date, lies in what was once

(*Continued on page* 107.)



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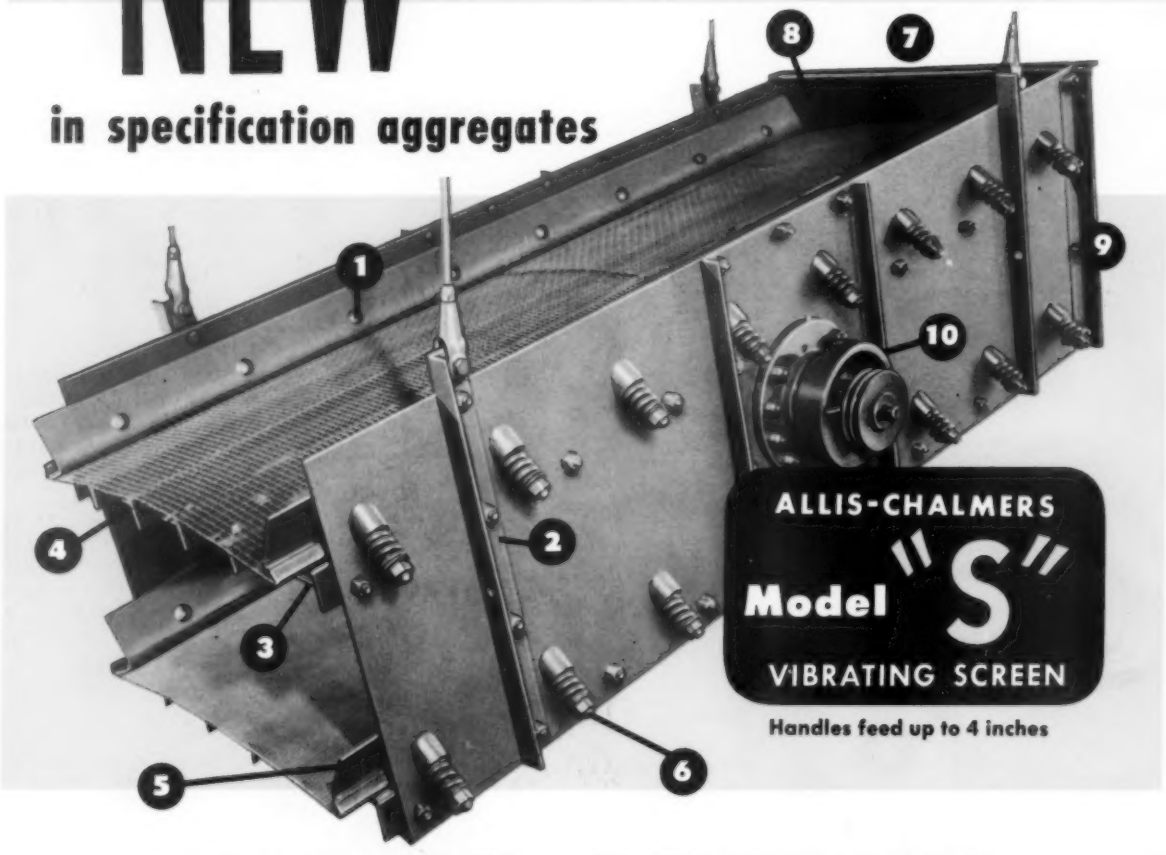

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2. **Rigid side plates** reinforced by vertical angles.

3. **Sturdy screen deck frame** features heavy channels, diagonal braces, replaceable cross members.

4. **No metal-to-metal contact.** Full-length rubber buffer strips cushion screen cloth.

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6. **All parts replaceable.** All bolted construction, using locknuts.

7. **Feed box** (optional) absorbs impact of incoming material. Provides uniform distribution when equipped with flow control gate.

8. **Back plate** (standard) **prevents spillage** — adds structural strength.

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the bottom of an ancient lake. It is mixed with a clayey gangue in a bed more than 100 ft. thick. Essentially a blanket type of deposit, it has no definite dip or strike, but there are numerous faults. Overlying the borate is 135 to 210 ft. of overburden, the upper 50 to 80 ft. of which is alluvium. Below the alluvium are lake bed sediments, topped by scattered zones of boulders of sand and gravel cemented by calcium carbonate. Older alluvium, tilted and faulted lake bed sediments, consisting of fine silts and impervious clays with alternating lime and chalky beds and some slate, lie atop the borate beds. The impervious clays in the lower alluvium prevent rain water seeping down from the surface from passing into the borate. This was a factor that kept underground workings dry, and it will facilitate open-pit mining. The ore is strong, clean, fairly easy to cut and drill, non-toxic, noncorrosive, nonabrasive, and nonflammable.

Preliminary stripping, contracted to Isbell Construction Company, Reno, Nev., started on January 4, 1956. Isbell will strip to ore, removing 9,500,000 tons of overburden in the two years allotted in the contract. Work is proceding on one 8-hour shift and one 7½-hour shift, at 25,000 tons per day.

A scraper dumps the excavated material on a waste dump 1½ miles from the cut. Some of the waste material will be used in the construction of flash flood control dikes, a tailing pond, and an air strip.

The new pit lies in virgin ground; *i.e.*, the land has not been tunnelled by underground workings. As designed by Robert E. Kendall, mining engineer, and others in Pacific Coast Borax executive and mining departments, the pit, when complete, will measure 900 by 1,400 ft. At the present stages of excavation, however, it is shaped much like a golf club. Isbell cuts 50-ft. wide benches every 50 ft. with a ½ to 1 slope in alluvium and ¾ to 1 in soft shale. Ore benches will also be 50 ft. and will be shovel-sloped. The overall pit slope will be 1.4 to 1. Haul roads are 40 to 60 ft. wide, with a maximum grade of 7 percent. Two Caterpillar No. 12 motor graders grade and maintain them, and a 7,500-gal. water truck keeps the dust down.

The stripping equipment includes three Caterpillar DW20s and seven Euclid 14TDTs and five S18 scrapers pushed by three Caterpillar D9 trac-

(*Continued on page* 122)

This is an aerial view of the new pit at Boron. Currently shaped like a golf club, the pit will eventually be circular. In the hills in the background are the rocket test stations for Edward Air Force Base, P.C.B's neighbor in the Mojave Desert.

A.R.B.A. SHOW

Highlights Dramatic Equipment Progress

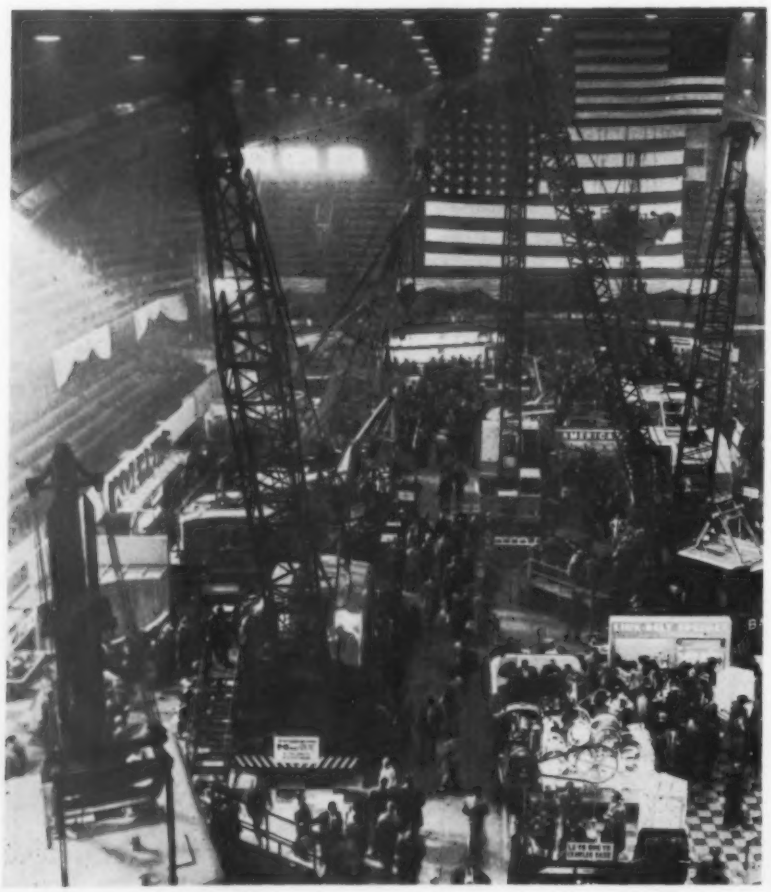
Chicago Host City To 67,000 Roadbuilders

BILLED as a Pageant of Progress in Construction Machinery, the 1957 American Road Builders Association road show and convention, held in Chicago January 28 to February 2, furnished graphic evidence of the industry's advance since 1909, when the first roadbuilding equipment exhibit was held in Columbus, Ohio.

With 47 technical and committee meetings held in the Conrad Hilton Hotel convention, the gathering also highlighted the many complexities involved in modern highway construction — particularly timely and significant in view of the largest road building program in history now getting underway.

Indicative of the interest on the part of machinery manufacturers and the highway construction industry alike, is the fact that this road show developed into the largest industrial exposition ever assembled under one roof—at the International Amphitheatre—and was attended by some 67,000 roadbuilders.

Virtually every inch of the 585,000 sq. ft. of exhibition space available was taken up by the $12,000,000 worth of equipment displayed. This represented the products of 250 equipment manufacturers and 60 producers of highway materials and supplies.



A view of part of the 1957 Road Show at the International Amphitheatre. Some 67,000 roadbuilders and highway officials visited the exhibit—about twice the expected attendance.

Evidence of the impressive effort and planning required to assure an informative and outstanding equipment show, is the fact that more than 1,000 mechanics and carpenters were required to set up the exposition. More than 200 railroad cars and over 700 trucks were used to carry 14,000,000 lb. of equipment from manufacturers' home plants to the amphitheatre.

In addition to the contractors, highway officials, and engineers who were registered, the convention and show drew about 1,500 delegates from 60 other countries. A fleet of buses operating continuously on a 10-minute schedule during show hours provided transportation between downtown hotels and the amphitheatre.

An estimated $8,000,000 was spent by the manufacturers to stage the exhibit, and 1,500 of their representatives were on hand to explain or demonstrate the various items of equipment and products. Variety

was a keynote of the exposition, with the machines displayed running the gamut from a 110-ton shovel to a 26-lb. portable pump. Along with numerous types of earthmoving equipment were drills, compressors, pumps, portable crushing and screening plants, bituminous and portland cement concrete mixing plants, pavers, and many other examples of highway construction equipment.

Not only did the machines displayed show a naturally striking contrast with those of the first show, held 46 years ago, but even in comparison with the most recent exhibit—in 1948—the advances in design capacity were significant. Greater versatility was apparent; horsepower has been doubled in some types of equipment; earthmoving units were substantially larger; paving machines are faster; mixing plants have a greater degree of accuracy; and ease of operation has been raised to a high degree in virtually all equipment.

In order to make available to the construction and operating men touring the show as much information as possible, cutaway models—from scale to full-size—illustrating important equipment features and design, and also sound movies, were employed by many exhibitions to illustrate field operations involving their products.

New Officers Julien R. Steelman (president, Koehring Co.) was elected president of A.R.B.A. for the coming year at the annual business meeting of members during the convention.

Elected to the district vice-presidencies were: J. E. McCracken (sales engineer, Bethlehem Steel Co.), northeastern district; Nello L. Teer, Jr. (president, Nello L. Teer Co.), southern district; Harold L. Plummer (chairman, Wisconsin State Highway Commision), central district; and W. A. Buggs (director of highways, Department of Highways, Wash.), re-elected vice-president of the western district.

Jennings Randolph (assistant to the president, Capital Airlines) was re-elected treasurer of the association.

New directors who will serve until 1960 are: Earl Coyne (county superintendent of highways, Brown County, S. D.); DeWitt C. Greer (state highway engineer, State Highway Department, Tex.); Howard S. Kaulbach (street maintenance engineer, Oakland, Calif.); G. Donald Kennedy (president, Portland Cement Association); Virgil Snow (director of sales, Euclid division, General Motors Corp.); George Stewart (publisher, *Constructioneer Magazine*); and J. W. Thompson, (Thompson-Arthur Co., Greensboro, N. C.).

Above: Julien R. Steelman, president, The Koehring Co., Milwaukee, Wis., was elected to the presidency of A.R.B.A. for 1957.

Right: General Louis Prentiss, left, A.R.B.A. executive vice-president, and J. N. Robertson, center, retiring president, present a symbolic model to the new federal highway administrator, Bertram Tallamy, in opening the exposition.

Officials and speakers in this group include (l. to r.): Gen. Louis W. Prentiss, executive vice-president, A.R.B.A.; Enoch R. Needles (Howard, Needles, Tammen, and Bergendoff, New York, N.Y.), Hal G. Sours, Columbus, Ohio, and Paul B. Reinhold (Atlas Equipment Co., Pittsburgh, Pa.—all past-presidents; treasurer, Jennings Randolph (assistant to the president, Capital Airlines); central district vice-president, Harold L. Plummer (chairman, Wisconsin State Highway Commission); retiring president, John N. Robertson (director of highways, District of Columbia); southern district vice-president, Nello L. Teer Jr. (Nello L. Teer Co., Durham, N.C.); and deputy executive vice-president, Burton Miller.

An example of the new dump truck models among the giant earthmoving equipment displayed at the show.

AT CONVENTION SESSIONS

Labor In a progress report presented to the Contractors' Division, Stuart Rothman, solicitor of the United States Department of Labor, stated that more than 600 highway projects on the new interstate system have been started, or soon will be, and that every worker on these jobs will be guaranteed pay minimums equal to the wages prevailing in the locality of each project.

Further, on these 600 jobs and every such job for the next 13 years, laborers and mechanics engaged in the initial construction of the interstate system will be assured, by virtue of the inclusion of the Davis-Bacon Act in the Federal-Aid Highway Act of 1956, at least the wage prevailing in the given locality for similar work.

In issuing wage determinations under the Highway Act, Mr. Rothman pointed out, the law calls for consultation between the Department of Labor and the highway department of the state involved. The arrangement works very well, the speaker said, adding that the Department of Labor has received excellent co-operation from the state offices in every instance.

Mr. Rothman noted that it is a great tribute to the construction industry—employer and employee alike—that the program will have built-in protection against sub-standard wages and working conditions.

Engineering the Accelerated Highway Program To point out what is meant by the "accelerated highway program," A. C. Clark, deputy commissioner, Bureau of Public Roads, enumerated a few facts concerning the progress of the project.

One hour after the President signed the Federal-Aid Highway Act of 1956 on June 29, the Secretary of Commerce signed the Certificate of Apportionment for the first year's authorization of $1,125,000.000, it was noted. Further, an additional apportionment of $2,550,000,000 was made to the states on August 1, 1956, for the fiscal year 1958.

When the 1959 apportionment is made, Mr. Clark said, $6,500,000,000 will have been apportioned to the states in one year—more than had been apportioned in any previous 14-year period in history. More federal-aid highway funds will be available to the states in the first 4 years of the new program than in the previous 40 years of federal-aid combined.

Less than three weeks after passage of the Act, the Bureau of Public Roads approved geometric design standards for the interstate system that had been adopted by the American Association of State Highway Officials. The next engineering step being the preparation of detailed estimates of the cost to complete the system to the foregoing standards, the Bureau, after field testing in three states, last October distributed an instruction manual for the preparation and submission of this information.

In addition, a guide for estimating 1957 traffic by route sections was developed and distributed to the states, and the preparation of cost estimates is now well underway, Mr. Clark stated.

To expedite engineering of the program, Congress authorized in the 1956 Act the use of photogrammetry wherever practicable. In addition to encouraging the states to wider use of that technique, the Bureau has been working with them to develop greater applications of electronic computers.

In another area, the acquisition of right-of-way can be facilitated by the availability now of federal funds for that purpose. Necessary land can be obtained as much as five years in advance of construction, which will permit orderly removal of buildings, utilities, and other obstructions before moving on to the job site.

Another factor indicated to be of considerable aid in speeding up construction activities is the use of radio communication. The value of radio has already been clearly demonstrated in past construction. By means of radio, engineering, inspection, and surveying personnel can be brought without delay from other areas to the point where needed.

Mr. Clark also pointed out that support and co-operation from the general public—developed through sincere public relations efforts—is mandatory to the maintenance of the desired schedule for each phase of the program.

Address by Rep. Fallon In emphasizing the importance of the new highway program, the Hon. George H. Fallon, chairman, Subcommittee on Roads, Committee on Public Works, U. S. House of Representatives, noted that the greatest single combination of economic activities in world history is the building of roads.

since passage of the new Federal-Aid Act, much has been accomplished in those areas which are necessary and prerequisite to actual construction, the Congressman stated. These include the establishment of design criteria, advance planning, engineering, public hearings, and acquisition of rights-of-way.

In considering points further in the future, Rep. Fallon stated that he had recently introduced legislation authorizing and directing a comprehensive study to be made by the Bureau of Public Roads. This study would be concerned with the feasibility and potential extent of utilizing interchanges, and other suitable areas adjacent to the inter-

state system, for the construction of heliports. Such it was felt, would be a logical part of the orderly development and zoning of business areas around the highway interchanges.

The "A-B-C," or primary, secondary, and urban systems must not be neglected because of the extensive consideration begin given the interstate system, the speaker cautioned. The former are vital arteries to the latter, and it has been indicated as the intent of Congress to increase federal-aid funds for A-B-C roads at the rate of at least $25,000,000 for each biennum until the total of $1,000,000,000 annually has been reached.

In conclusion, Rep. Fallon commended the work of A.R.B.A.'s task forces, who have provided Congress with authoritative and comprehensive reports regarding the capacity of the highway industry, and its ability to meet the requirements of this huge public works program.

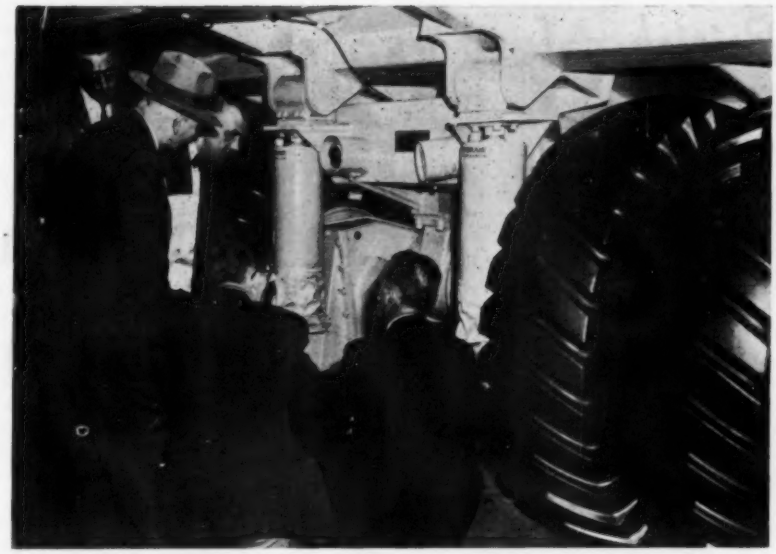
Address by Rep. Boggs Financing features of the highway program were described at a general session by the Hon. Hale Boggs, member, Committee on Ways and Means, U. S. House of Representatives. Such features of the original bill were rejected, causing the setback during the closing days of the first session of the 84th Congress, the speaker declared.

Two basic errors in the original plan led to its rejection, in the opinion of Rep. Boggs: first, that plan would have frozen revenues over a 30-year period and led to excessive interest costs; and second, the tax program substituted then for the originally recommended bond issue was not properly considered.

However, during the second session of that Congress, the public works features of the proposed legislation were given to the Committee on Public Works; but the tax features were this time referred to the Committee on Ways and Means, which has traditionally handled these matters and has a staff trained in taxation.

The resultant legislation provides rates that generally follow the pattern of a graduated tax basis, as well as providing for continuing studies by the ways and means committee to assure that the distribution of the tax burden is equitable.

It was pointed out that several significant factors with respect to the tax features of the highway act may not have had enough emphasis. One such factor is the relationship now between highway user taxes and sums expended by the Federal Government for highway purposes. Until the adoption of the present highway revenue act, highway user taxes were purely and simply revenue measures, and the monies were funneled directly to the general fund of the U. S. Treasury. Not only has the new act changed that and dedicated most of these funds to highway use, but it has also set up a trust fund into which revenue is specifically channeled and from which money can be drawn only for purposes set forth in the highway legislation.



Typical of the interest shown in construction and operating details of new equipment is this group of men checking a feature on a large haulage unit.

In the few months (five through December) that the fund has been in existence, nearly $643,000,000 of excise receipts have been paid in. It is estimated that during the 16-year period a total of $38.500,000,000 will be raised, of which $23,700,000,000 will come from taxes previously levied and $14,800,000,000 from the new excises in the highway act.

However, in the opinion of Rep. Boggs the new highway network will generate an astounding increase in motor travel, and the foregoing 16-year estimate will prove to be very low. This is suggested to be beneficial, since additional construction will undoubtedly be required; and under the terms of the legislation the Congress is authorized to review the program—financing as well as construction—from time to time.

The highway program was described as the greatest bargain ever purchased by the American motorist. It has been estimated that for an annual cost of $8, the motorist will save over $25 in wear and tear, insurance, and other factors; he will also enjoy a substantial reduction in the toll of traffic deaths, which now approaches 50,000 people annually.

Industry Developments and Projects During the several technical and committee sessions, a number of papers were given on materials, soil stabilization, secondary road work, etc. While space will not allow reproduction of all the interesting papers presented, the following digests are representative of some of the topics covered.

Among the various construction materials known to man, asphalt is one of the oldest, as pointed out by John M. Griffith, engineer of research, the Asphalt Institute. Further, by far the greatest proportion of petroleum asphalt produced today—about 70 percent of the current 18,000,000-ton annual production—is used in highway construction and maintenance.

In view of this widespread use, strong effort is being made to establish a uniform terminology among state highway departments and engineers concerned with asphalt applications to highway construction. As it now stands, many states have a different designation for an asphalt-aggregate mix which is basically the same in each case.

Another new development in this field is that of the emulsified asphalt slurry seal coat, which will permit the refinishing of an old pavement surface with considerable economy. With proper aggregates, it will pro-

(Continued on page 129)

British safety expert outlines

An Accident Prevention Campaign in Industry*

By G. SMITH
Divisional Safety Officer
Imperial Chemical Industries
Lime Division

THE intensive safety campaign in the Lime Division commenced at the end of 1948 with a safety exhibition and the appointment of a full-time safety officer. As may be seen from the first chart, the frequency of accidents was at that time just over 12. This figure has been reduced progressively each year until at the end of 1953 it was just under 1½.

PRODUCTION WITH SAFETY

There may be some feeling of doubt as to whether an intensive safety campaign is compatible with the maintenance or increase of productivity. Our experience is that the two desirable results are compatible. Consideration of the causes of accidents not infrequently reveals faults in the methods employed or the control exercised, and we have found that improvements in methods is one of the outstanding ways of increasing productivity and overall efficiency.

We know that radical changes in methods—for instance, in mechanization—can in themselves reduce the accident frequency, but even then we have reduced that frequency very materially by an intensive safety campaign.

We know that on works which are not yet mechanized we have reduced accidents and yet maintained or increased our productivity.

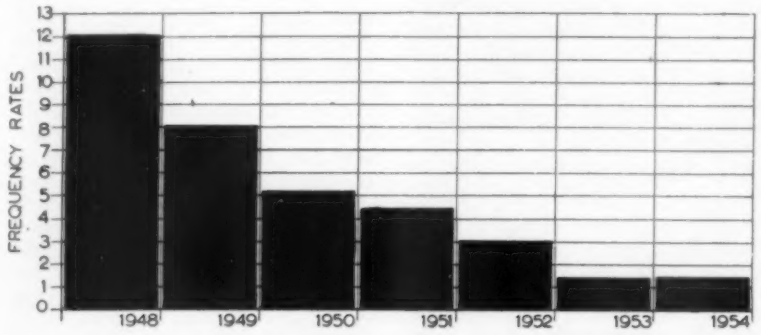
The first prerequisite for any safety campaign is that the management at all levels, the workers, and the Trades Unions representatives should really believe that it is worth while and, in the most mercenary light, that the technique of accident prevention with the complementary drive towards tidiness, methods investigation, and a spirit of co-operation need not result in increased costs or letting down the management or the workers by rectifying obvious weaknesses.

It is an axiom in safety circles that "safety is an essential part of efficient production."

POTENTIAL ADVANTAGES

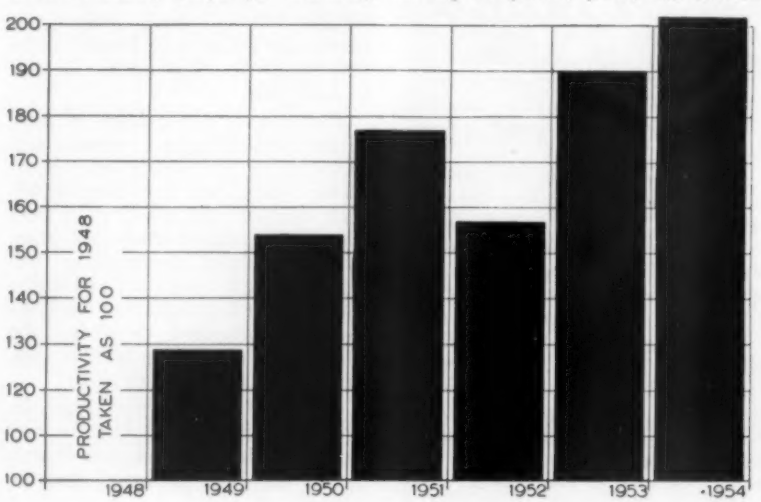
What does a company stand to gain from a safety campaign?

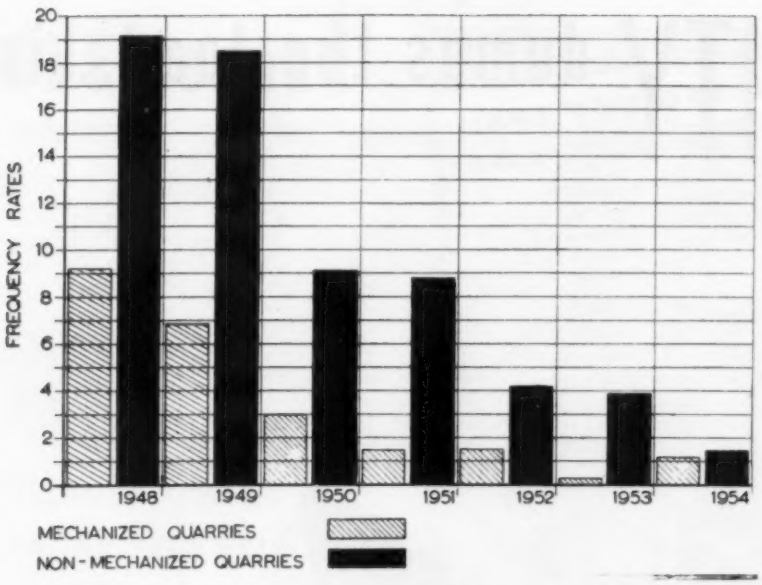
* A paper given before the members of the Limestone Federation in London, October, 1955.



Above: Accident frequency rates, including all quarries, plants, and services.

Below: Productivity (output per man-hour), including all quarries, plants, and services.





Accident frequency rates, comparing mechanized and non-mechanized quarries.

1. The diversion of man-hours hitherto lost to accidents, to production. While this is not considered a major contribution which safety can make to production, this actual saving of man-hours can be very considerable. The second chart illustrates this most graphically.

2. The creation of a widespread spirit of co-operation. This improved spirit of co-operation among the workers and between management and workers extends far beyond the realm of accident prevention and into every aspect of industrial life. This in itself makes for a happier team of men, smoother and more efficient working, better discipline and supervision; in general, it creates conditions most favorable for efficient production.

3. Complementary results in changes of methods arising from the accidents' investigation. Investigation of accidents frequently results in safer methods being evolved, and occasionally method changes of a more far-reaching nature, resulting in higher productivity.

4. Potential influence on rates for "employer's liability insurance" from most insurance companies. As the rates must in some way be related to the risk, a reduction of the risk would, quite reasonably, justify a reduction in the premium.

SAFE MECHANIZATION

The design of plant and equipment can have a significant influence on safety. (See third and fourth charts.) The utmost attention to the design of plant, the layout of machines, location of controls, lighting, guarding, etc., not only results in greater productive efficiency but in greater safety. Over the last few years I.C.I. has published a number of volumes (14 so far) of Engineering Codes and Regulations (Safety Precautions) which set out the safety principles to be followed in all aspects of design, installation, and operation of a plant. Owing to the demand from those outside I.C.I. for these books, the company has given the rights to publish and sell them to industry to the Royal Society for the Prevention of Accidents. Anyone who is interested may obtain any or all of the volumes so far published from this source.

But I would sound a word of warning. The provision of a safe plant and safe conditions does not automatically eliminate accidents. These conditions have to be maintained, and the most efficient plant and the safest conditions are no substitutes for a well developed sense of safety consciousness and alertness on the part of the operatives. The prime duty of any safety organization is to create and *maintain* this personal regard for safety.

The overriding necessity for this safety consciousness on the part of the workers is borne out by the experience of industry in the U.S.A., where machinery guarding is at the minimum, and yet the number of accidents is remarkably low solely because of the high degree of safety consciousness developed in the workers. They recognize, as our own must eventually, that each man has a major responsibility for his own safety.

DEFINITIONS OF TERMS

Some definitions of the terms I shall use would be helpful.

Lost-time accidents are all accidents which render a man incapable of performing any useful work and which cause him to lose any time from work beyond the day or shift on which the accident occurred.

Alternative-work accidents are those which render a man incapable of continuing at his normal job but able to do useful work at an alternative or lighter job, in which case he does not lose any time from work.

Accident frequency rate — The accident frequency rate is the number of accidents per 100,000 man-hours of working time. This is the definition which is adopted throughout I.C.I. and, in fact, the great bulk of industries in this country. It is the basis recommended by the Royal Society for the Prevention of Accidents. The figure of 100,000 hours is a rough estimate of the number of hours in a man's normal working life. The accident frequency rate therefore denotes the average number of accidents which a man can expect during his working life at the prevailing rate. For instance, due to the success of the accident campaign in my division, the expectation of accidents for each man during his working life has been reduced from 12 in 1948 to about 1½ at the present time.

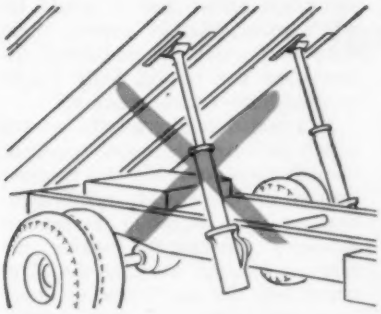
The figures I have already given on the chart are the lost-time plus alternative-work accidents per 100,000 man-hours worked, but since the beginning of 1954 we in I.C.I. have decided not to include alternative-work accidents in our internal frequency rates. This decision has been arrived at for purely domestic reasons and in any case the number of alternative-work accidents is so small as to have very little effect on the final frequency rates.

ORGANIZATION OF SAFETY

The organization required by any concern to bring about a reduction in accidents need not be large or expensive. The active prosecution of accident prevention is essentially a matter for the plant workers. It is in the plant that accidents occur, and steps to prevent them or prevent a repetition must be taken there. The major responsibility for preventing accidents and making working conditions safer must rest with the plant and good results can only be obtained by constant effort and

GRAVITY dumps the load...in

ONE second



Koehring Dumptor® *has no body hoist*

Operator drives up, trips the body-release lever — and *gravity* tilts the 6-yard body 70 degrees. One second later the load is out, and Dumptor is on its way back for the next load. It's as simple and fast as that!

There's no 15 to 25-second wait for slow-acting body hoists — no expensive hoist replacement parts, maintenance or down-time. And, you get the same one-second dumping *every time,* under heaviest loads, in all temperature extremes, because Koehring *gravity-dump* never balks — never wears out.

One-second dumping earns a substantial increase in yardage output, too. For example — take a typical 1,000-foot haul where you would normally make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time per hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production.

This saving is typical of Koehring Dumptor's basic principle — to reduce all non-productive time to a minimum — to increase work-time for more yards per day. See Koehring distributor for complete information.

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN

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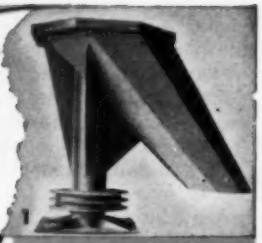
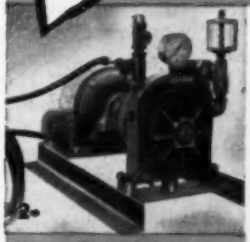
Subsidiaries: JOHNSON PARSONS KWIK-MIX

HAVE YOU OVERLOOKED ANY OF THESE IDEAS?

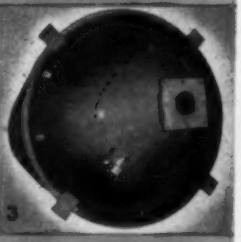
There are places in your batching and mix plants where these low-cost Johnson accessories can profitably increase efficiency on the storage and batching of aggregates and cement . . .



1 **Pivoted Distributor** feeds aggregates into multiple section bins. It turns and locks into position by ground-level control.

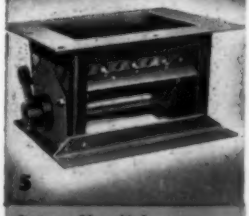


2 **Rotary Vane Compressor** supplies 7 cu. ft. of air pressure per minute to aerate cement silos and bins. Has 15-pound limit-relief valve.

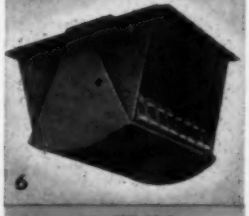


3 **Aeration Fittings** properly spaced in storage silos and tanks keep bulk cement fluid and free-flowing at all times.

4 **Bin Gauges and Signals** accurately register "hi-lo" levels of aggregates or cement. They are dust-proof . . . operation is automatic.



5 **Rotary Plug Valve** controls flow of cement from silos into screw conveyors. It's also used as a fill valve in cement batchers.

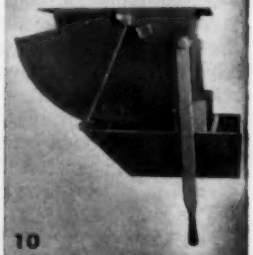


6 **Aggregate Fill Valves** single-clam, radial-type, have choker weights for jam-proof closing with large aggregates. Hydraulic pressure lub.

7 **Receiving Hoppers** all sizes, types for box-car, hopper-bottom car, truck, or bag delivery of cement. All-welded, weather-tight.

8 **Elevator Buckets, Chains** 2 types, 7 sizes of buckets for aggregates and cement. Long-life steel chain has carburized knuckles.

9 **2-Way Elevator Discharge Valve** is a flop-type chute which directs flow of cement from elevator into bin storage tank, or silo.



10 **Tunnel Gate** a single radial clam gate for stockpile reclamation. Skirt board is hinged, opens and locks in any position.

11 **Chain Sprockets** 19-tooth chilled-rim cast iron with heavy split hub and double-rim lugs. Also, 12-tooth cast-chrome manganese.

Mail to: C. S. JOHNSON CO. CHAMPAIGN, ILL. (Koehring Subsidiary)

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DIVISION _____

STREET _____

CITY, STATE _____

ZIPQ

vigilance at the plant. In most cases the personnel carrying out the bulk of the work are already on the plant payroll, and the problem is one of guiding and stimulating their efforts.

In the Lime Division of I.C.I. the only additional manpower involved by the introduction of a safety campaign consists of a safety officer with a typist-computor. The safety officer is responsible to the production director. In the whole of I.C.I. both centrally and in various divisions the organization of safety is in the hands of a surprisingly small but extremely experienced staff of experts in the field.

In general, accident prevention is largely a matter of common sense, and the safety officer's task is to persuade the greatest number of people to direct their energies towards reducing accidents, and to keep on finding new and novel means of maintaining continued interest.

Essential Prerequisite for Safety The creation and maintenance of the effort necessary involves a positive conviction both in the plant and on the part of management that taking adequate steps to prevent accidents is right from every viewpoint: (1) humanitarian; (2) company and national efficiency; (3) the individual worker and the unions representing him; and (4) economic.

Records and Statistics In safety work the compilation of elaborate and costly statistics is quite unnecessary. Certain minimum records are necessary, and the only statistics which should be compiled are those to which frequent reference will be made. To repeat, safety is essentially the correct application of common sense and experience by employees, and it will be clear that statistics *as such* may be of little help to them.

The only *essential* records are those which will enable the company: *(a)* to ascertain the current frequency of accidents; *(b)* to discover the distribution of accidents, that is, whether a majority is occurring in a particular plant or a particular section of a plant, or whether in connection with a particular operation; and *(c)* to discover what is causing these accidents.

Points *(b)* and *(c)* will enable the safety officer to apply his energies in the most profitable direction and in the most suitable form.

Returns to Central Bodies Central bodies such as the N.J.I.C.Q. Accident Prevention Committee, federations of various industries, and the head offices of large combines may, as the campaign advances, require a certain amount of information to form collective as well as individual pictures, but for this purpose the amount of information required in the initial stages would be negligible.

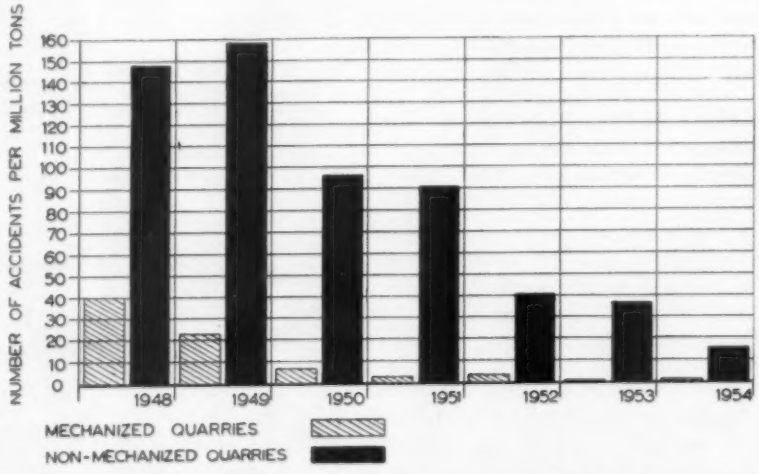
As a primary requirement of any central body must be to stimulate general interest in safety, I would suggest this can best be done initially by asking for no more information than is required to compile the charts on the frequency rate of accidents and on the time lost to production due to accidents. Those firms who return this information would be able to ascertain their individual positions as regards safety and lost-time and would be able to compare their positions with the average figures for the industry, which would be provided by the central body.

As interest grows, a demand for greater assistance or more informative collective information from the central body must be expected from individual firms; and it would be quite reasonable to expect these firms to provide the additional information the central body would require to meet these requests.

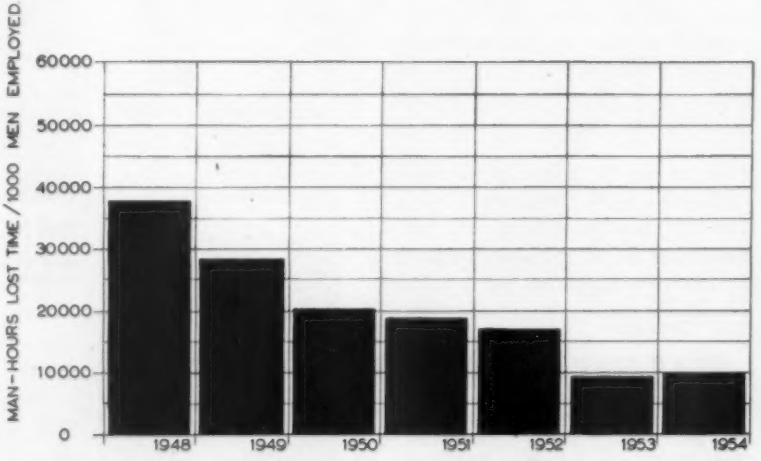
As a matter of interest, the returns which are currently made, by plants, monthly and annually, by member firms of the Cement Makers' Federation to their Accident Prevention Advisory Committee include the firm's name, the name of the plant concerned, the number of accidents (lost-time only, including fatals), total man-hours worked in the period, frequency rate, and type.

Incidentally the Cement Makers' Federation has instituted an annual competition for the plant with the best safety record within the group.

(*Continued on page* 132)



Number of accidents per 1,000,000 tons quarried, comparing mechanized and non-mechanized quarries.



Lost time due to accidents, including all quarries, plants, and services.

Hardsurfacing Rock Crusher Drums By Automatic Welding In Field Or Shop

CONVERSION of a standard semi-automatic, submerged arc welding unit to full automatic operation by the addition of a variable-speed rotating fixture and powered-head support carriage is said to have made possible noteworthy maintenance economies in hardsurfacing crusher rolls, tractor rollers, and idlers, and power shovel parts. This work, which can be done either in the field or in the shop, makes use of new alloy-containing fluxes with mild steel electrode wire to produce high-alloy overlays resistant to abrasion and impact in varying degrees. Simplicity of the setup, and portability and versatility of the equipment allow high deposition rates—23 lb. per hour in the field, for example. This means that crusher shells can be kept up to peak operating condition, with only a few hours of downtime for resurfacing.

Wallner Welding, Inc., Duluth, Minn., has devised the system and has made it available under the trade name of Wal-Weld. Basic welding equipment, agglomerated alloy fluxes, and electrode wire furnished by the Lincoln Electric Company are used. The semi-automatic welding head, known as an ML-2 or "Squirt" welder, is suitable for operation in confined areas, such as inside a large crusher of the type shown in Figure 1. After all bulky accessories have been removed from within the crusher, the welding gun and travel carriage can be positioned inside, as indicated in Figure 2, permitting the hardsurfacing to be applied to the shell in position.

A limit switch energizes the carriage motor after each revolution of the drum and indexes the welding head to lay the next bead beside the preceding one, without any attention from the operator. This makes for an exceptionally precise deposit, in the accepted sense of hardsurfacing. The carriage is remotely controlled in both directions through a speed range of 0 to 60 in. per minute.

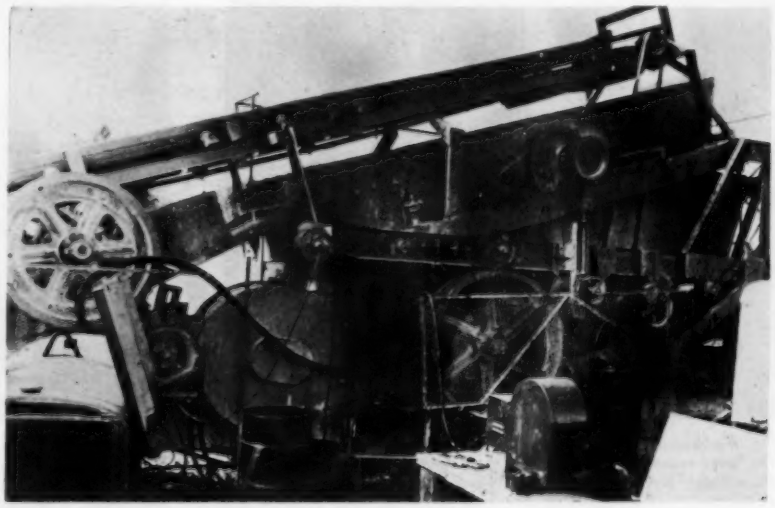
If it is desired to apply corrugations—transverse beads instead of circumferential—this can be done by holding the shell stationary through the remote control panel and running the carriage along its supporting beam and indexing the shell after each traverse. The remote control panel, shown in Figure 2, contains all connections for the operation of the travel carriage, the positioner or crusher rolls, and the welding head with its flux-containing cone.

A micro-switch is installed in the circuit of the welding gun, which prevents the wire from sticking to the work when the arc is broken. This device operates in conjunction with an "on-weld-off-inch" switch by breaking the wire feed motor circuit just before the arc is stopped.

In field operations, all weld power supply and electrode wire feed apparatus may be set up outside the equipment under service—a method not practicable in fully automatic procedures. A 600-amp. gasoline engine-driven welding machine furnishes the power and avoids the necessity of removing major parts of the crusher for accessibility.

Figure 3 is the power head to turn the shells as the deposit is being laid. It is not necessary to attach the drive to the crusher directly. The power head is placed at ground level, and a belt is strung to the large sheave on the crusher for turning the shell at the desired welding speed. The power head has a variable-speed drive through a 1/3-hp. motor. Variations are made by an adjustable sheave on the motor and field re-

Fig. 1—Automatic hardsurfacing of rock crusher rolls in position is simplified by moving all bulky equipment, such as generator and wire feed mechanism, outside the installation and setting up the welding gun inside the machine.



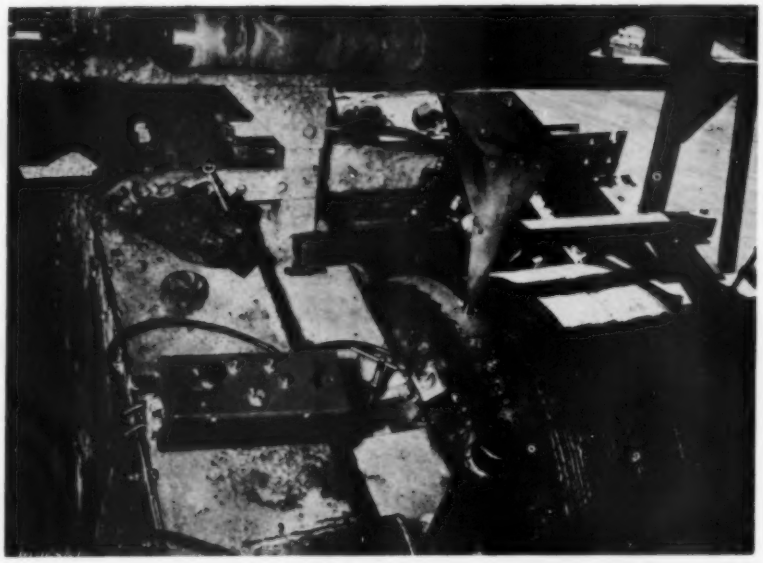


Fig. 2—A look inside the crusher shows the submerged arc welding gun traversing the drum, laying one bead alongside the next through automatic indexing. Remote-control box (left foreground) gives complete regulation of all movements.

sistance, giving output speeds on the rear sheave from 6.1 to 35.2 r.p.m. That is sufficient to drive roll shells at the preferred speed when the belt is connected to the large multiple-groove sheave on the crusher.

With the use of high-alloy fluxes, the recovery of excess agglomerated flux is worthy of consideration. Wallner has worked out a vacuum recovery unit of conventional design, with a nozzle about 4 in. behind the arc to pull off loose flux. Power to operate the vacuum pump on this device, shown at the left of Figure 3, is obtained from the gasoline engine of the welding machine by a belt sheave added to the head end of the crankshaft.

A similar arrangement has proved most practical in shop work for rebuilding tractor idlers, rollers, and other circular items requiring hardsurfacing. A typical, compact setup, Figure 4, indicates how a tractor idler is locked and centered on the shaft by means of a cone through the bore. It is possible to tilt the head up to 90 degrees to facilitate flange and fillet work on smaller rollers and idlers, as shown in Figure 5.

The 40-in. beam length of these shop equipment installations will handle all roll crushers and is sufficient to mount two tractor rollers or two idlers at one time for surfacing.

(*Continued on page* 122)

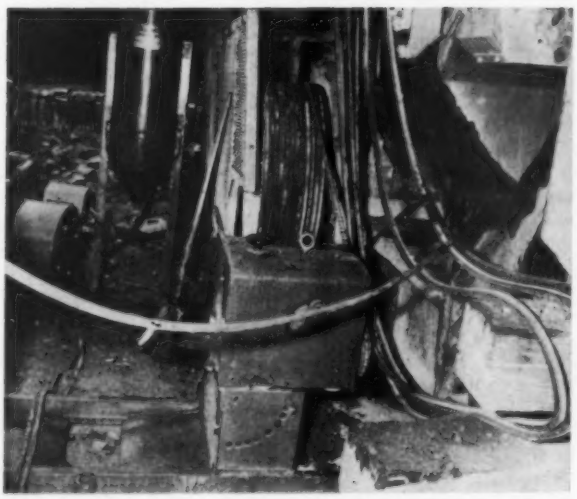


Fig. 3—The crusher shell is turned by the power head to give proper speed to the drum as the deposit is laid. In the left background is the vacuum flux recovery unit, powered by the gasoline engine generator drive.

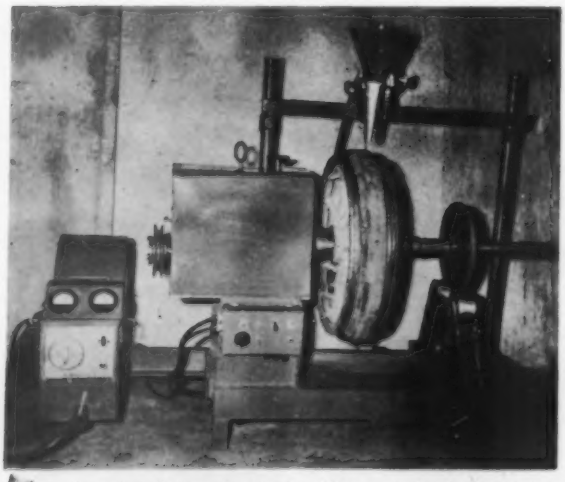


Fig. 4—Shop installation of a tractor idler ready for hardsurfacing. The cone-mounting plug on the shaft locks and centers the idler accurately. The carriage beam is about 40 in. wide and could accommodate more parts at one time.

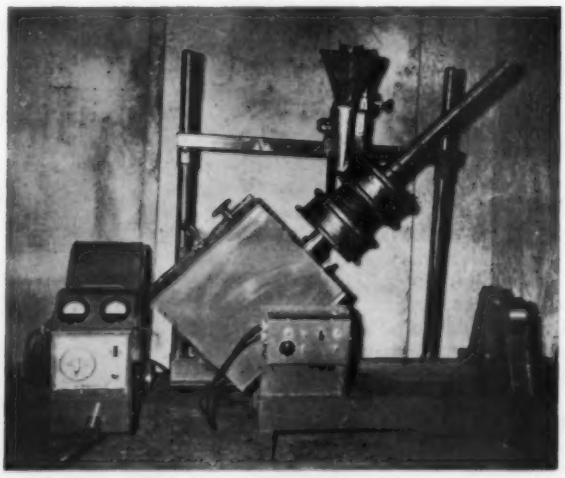


Fig. 5—For surfacing fillets and flanges of smaller parts, such as tractor rollers and idlers, the main shaft may be tilted up to 90 deg. and rotated under the welding gun on the carriage beam. The flexibility of this arrangement is obvious.

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MORE STABLE DRILL STRING through use of round pipe . . . BETTER AIR CIRCULATION and cuttings removal . . . FASTER DRILLING—faster retraction of hydraulic feed averages total of only 3 minutes on a 51′ hole . . . EXTENDED 55′ MAST permits drilling 50′ hole without adding pipe . . . BETTER MOBILITY —hydraulically raised and lowered mast is left assembled during long moves . . . 9″ HOLE allows wider hole spacing, economical use of large diameter powder.

This all adds up to new records in low cost per ton of rock. Get the whole story on the 58-BHR. Write to ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

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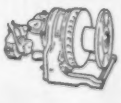

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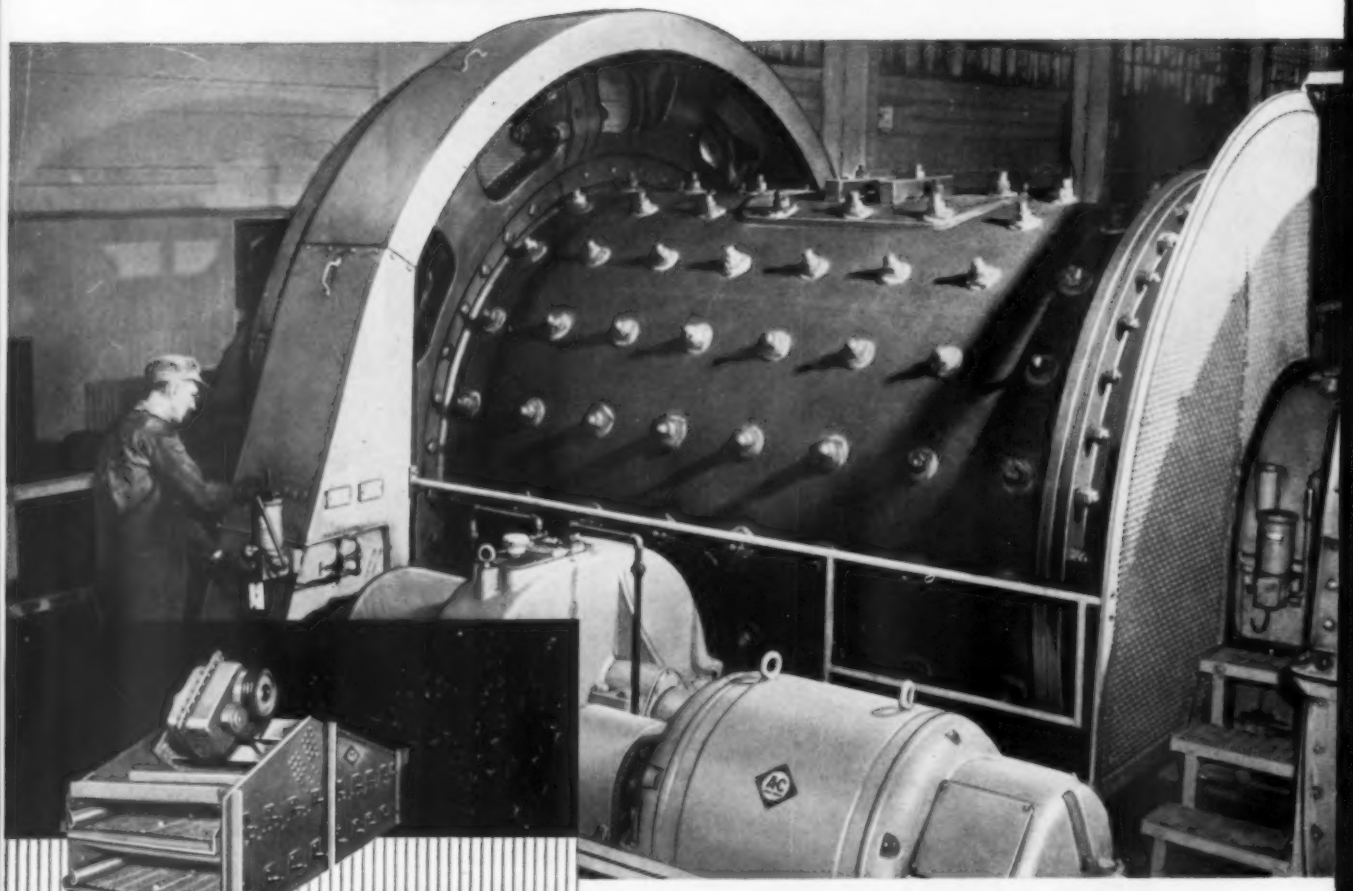

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GRINDING MILLS—Whether your process calls for individual mills or a grouped stage grinding series, Allis-Chalmers can make a right-for-the-job recommendation from seven different types of grinding mills.

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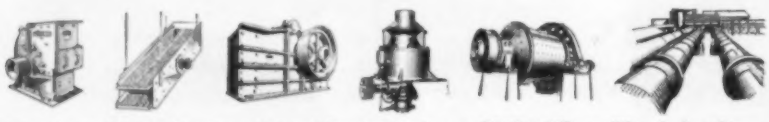

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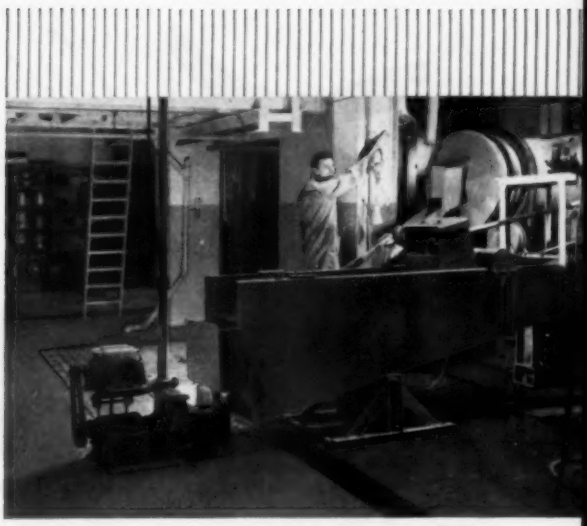
In this unique approach, your A-C team draws from a background of over a century of experience and an unparalleled concentration of field and laboratory data . . . detailed information on the processing of practically every material mined and quarried throughout the world.

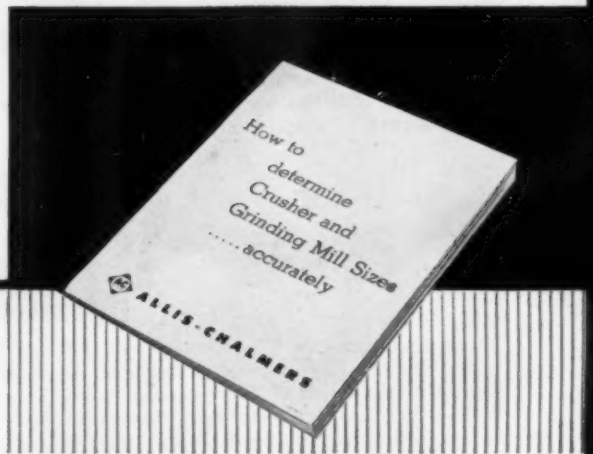
Better Equipment, Better Methods, Better Results for You

The utilization of this experience and intimate knowledge of your requirements has, of course, influenced the outstanding development and advanced design of Allis-Chalmers equipment. But more than that, these factors, combined with A-C diversification, have made possible the "coordineering" of related equipment in smooth, profitable processing arrangements in plants everywhere.

For more about the "more" you get, see your Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.



The A-C laboratory is one of the best equipped, best staffed in all industry. Information obtained in laboratory and pilot plant testing helps determine the equipment and process best suited to a given application.



This bulletin with its explanation of the "work index" formula enables you to evaluate any size reduction operation . . . compare efficiency of plants, circuits and machine. It offers the only practical approach to improving performance . . . of determining the right machine for a job. Write for Bulletin 07R7995.

CHALMERS

A-C ALLIS-CHALMERS

A-5114

Hardsurfacing

(*From page* 118)

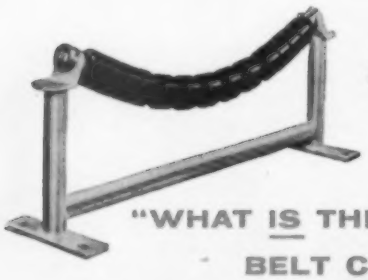
Obviously, it would be possible to extend the beam to accommodate more parts, if so desired.

The units are completely portable, since they do not depend upon any outside source of power. All controls are actuated through an ovesize 1-kw. exciter on the 600-amp. generator or motor-driven welder.

The introduction of agglomerated alloy fluxes, permitting hardsurfacing alloys to be introduced through the flux rather than through the electrode, has had a signal effect on these automatic hardsurfacing operations. For example, the use of a so-called low alloy flux, in combination with mild steel wire, provides exceptional impact resistance, together with good abrasion resistance for such parts as tractor rollers and idlers.

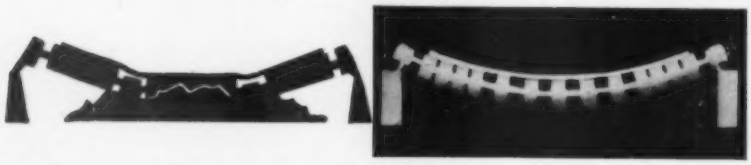
In respect to crusher rolls, the general practice has been to apply mild steel wire and a higher carbon type flux up to within two passes of the finished size. This flux is a medium-high alloy flux, lending more abrasion resistance and somewhat less impact resistance to the deposit. In such applications, it has been the procedure at Wallner to apply two additional passes with mild steel wire and a relatively new flux. The later is a high-alloy material producing complex chromium carbides in the deposit which will show Rockwell C hardness of 53-61.

Because of the high duty cycle of welding crusher rolls by the automatic method, care must be taken that they do not exceed a temperature of 600 deg. F. in hardsurfacing. Also, it is essential to loosen the wedges to allow the shells to shrink without breaking. After cooling, the wedges may be tightened and are ready to operate. A quick check reveals that some 38 crusher shells have been resurfaced by these techniques, reportedly without a single instance of breakage.



We've been asked...

"WHAT IS THE JOY LIMBEROLLER BELT CONVEYOR IDLER?"



Radically different from all other idlers, the Limberoller is a flexible steel cable suspended between two bearings . . . neoprene discs are molded to the cable . . . forming a single roll idler which turns on its own axis. This imparts a flexing action which is self-cleaning . . . prevents material buildup, a source of trouble with conventional idlers.

Supports the belt throughout its entire width . . . doesn't have the unsupported gaps left between the rolls like conventional idlers. Increases belt life 20% and more. Materials don't "bump along" from idler to idler, either.

Two bearings, instead of six. They are up out of the dirt zone, not hiding down under the belt. Joy has never replaced a single bearing due to normal failure. Heard enough? There's more . . . get the whole story from ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

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HOISTS • ELECTRIC PLUGS, RECEPTACLES AND POWER DISTRIBUTION SYSTEMS

Pacific Coast Borax

(*From page* 118)

tors. Three Caterpillar D8 tractors, two equipped with rippers and one as standby, rip the rock and caliche for easier scraper loading. The pit operations are under the direction of Isbell's project manager, Arnold Blair.

Isbell's D8s rip everything 4 ft. from the top down, save for some of the harder strata and boulders. These Isbell drills with three Ingersoll Rand jackhammers, powered by a 315 c.f.m. Ingersoll Rand compressor. They drill 2-in. diameter holes 2 ft. down and blast, thus saving undue wear and tear on the ripping equipment.

The scrapers have a 1½-mile haul to the dump. A part of the waste Isbell uses to build dikes, measuring 8 to 10 ft. high and 15 to 20 ft. wide at the top, to protect the pit and new refinery from flash floods. A tailings pond and an air strip are also being constructed from pit waste.

In April, 1957, Pacific Coast Borax officials expect to start mining ore. Equipment being readied includes 3-cu. yd. Bucyrus-Erie 54B electric shovels, Caterpillar D8 tractors and No. 12 motor graders, vertical auger drills, dump trucks, and miscellaneous service vehicles.

A fairly light, low-cost, high-capacity crusher, fed by an automatic vibrating feeder, will be located, first on the surface near the plant, then, in about three years as the pit expands, on the floor of the pit.

Concrete Aggregates for Monticello Dam Supplied by Commercial Producer

By HARRY F. UTLEY

Another ON THE SPOT Report

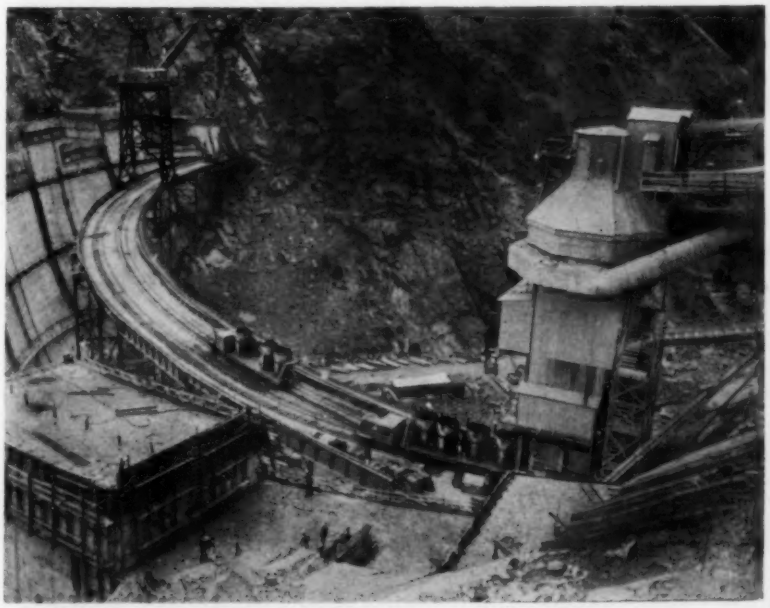
AGGREGATES for Monticello Dam in California, the only concrete dam under construction by the Bureau of Reclamation at the present time, are being supplied by the Madison Sand & Gravel Company of Madison, Calif., under a subcontract from the general contractor, Peter Kiewit Sons Company & Parish Bros.

In the process of construction since early 1954, the concrete arch dam is scheduled for completion early in 1957. Located in Putah Creek Canyon at the western edge of the Sacramento Valley, the project site is about 60 miles northeast of San Francisco and 38 miles west of Sacramento. About 325,000 cu. yd. of concrete are involved in the dam proper.

The Madison company's plants are at Madison and Esparto, Calif. A deficiency of boulders in both pits has made it necessary for the firm to obtain much of the top size requirement (plus 3 in. minus 6 in.) from other aggregates plants; and its trucks have ranged as far afield as Fair Oaks, Calif., 60 miles to the east, to obtain these cobbles. Except for the spillway shaft and the tunnel invert, which employ 3-in. maximum, all the dam concrete utilizes the 6-in. material. All the aggregate used is natural and uncrushed.

Bureau of Reclamation regulations for the project early ruled out as undesirable any sand obtained from Putah Creek or its tributaries. As a result, the sand is being obtained from the plant at Madison, while the company's plant in neighboring Esparto is supplying the bulk of the coarse aggregates. The one-way haul to the dam is about 25 miles over paved state roads, and the delivery trucks and trailers have been operating about 20 hours daily to keep the bins at the dam supplied.

Both the Madison company plants are conventional in flow-sheet and operation, employing modern washing-and-screening techniques and stockpiling conveyors to store the individual finished sizes. In order to comply with the Bureau's rigid sand specifications, the Madison plant is equipped with 25- and 15-in. Duraclones. These wet cylones obtain every available fraction of the need-



Concrete for the Monticello Dam is placed from this curved trestle. Locomotives deliver the buckets within reach of the revolving crane.

A general view of the Madison plant, viewed from the pit-run hopper ramp.

The underflow from the 25-in. wet cyclone is clean, fine sand which is blended in at the discharge end of the screw classifier. Feed to the cyclone is pumped from the sump overflow of the classifier.

The screening tower at the Esparto plant, seen between the 3- and 1½-in. finished-material piles.

ed extreme fines from the classifier overflows. Sand-gradation specifications were set up as follows:

Screen Number	Percent Retained (by wt.) Minimum	Maximum
4	0	5
8	5	20
16	10	20
30	10	30
50	15	35
100	12	20
pan	3	7

Coarse aggregates must not have a loss of more than 10 percent by weight after 100 revolutions in the Los Angeles rattler. In the sodium-sulphate soundness test, the weighted average loss after 5 cycles is not allowed to exceed 10 percent. Specific gravity on a saturated surface—dry basis—cannot be less than 2.60. Deleterious substances such as shale, coal, and clay lumps may not total more than 5 percent in the sand, nor more than 3 percent in the coarse aggregates as delivered.

The bottom-dump delivery trucks and trailers discharge their loads into a hopper at the project site, from which a short belt-conveyor transfers to the main 30-in. inclined conveyor running up to the top of five storage bins. A turnhead distributes the four coarse sizes—¾-in.; 1½-in.; 3-in.; and 6-in.—to four of the bins. The sand goes by a short shuttle conveyor from the turnhead to its bin. The steel sheet-piling bins are 42 ft. high and 23 ft. in diameter, except for the sand bin, which is 27 ft. in diameter. Combined bin storage totals about 5,000 tons.

Reclaimed by tunnel conveyors, the aggregates travel up to the top of the concrete plant where they are re-sized by a Symons 48-in. by 12-ft. 3-deck screen before they enter the bin compartments of the C. S. Johnson 500-cu. yd. Octobin plant. The concrete is mixed in three 2-cu. yd. Koehring 2S tilting mixers arranged below the batcher.

Natural pozzolan obtained from a source near Napa, Calif., is used in the concrete. This pozzolan and the Type II cement are trucked in, a 5,000-bbl. silo storing the cement, and a 3,750-bbl. unit containing the pozzolan. Separate Fuller-Huron 6-in. Airslides reclaim from the bins and deliver to the concrete plant.

All ingredients are batched by weight, mass-concrete specifications calling for 180 to 250 lb. of cement to 1 cu. yd. of concrete and 70 to 100 lb. of pozzolan. Coarse aggregates

(*Continued on page* 128)

The Universal 293QS on a road construction site west of Tremonton, Utah, 1955.

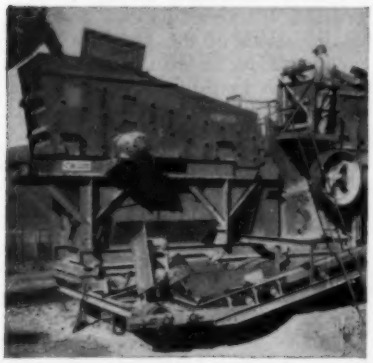
The Universal 293QS TwinDual Gravel King has

"Increased our pay load by 33⅓%, lowered operating costs 10c per ton"

Says Jed R. Abbott of Germer, Abbott & Waldron Construction Company, Tremonton, Utah

Abbott's company saved $20,000 on its first large order for aggregate produced by the Universal 293QS.

"After turning out 200,000 tons of material for U.S. Highway 91 last year," said Abbott, "this is the most economical plant we've ever operated. Our payload is a third more and our costs were ten cents a ton less than with other crushing equipment.



More than a gravel producer

The 293QS is the most versatile machine on the market—two plants in one! Inquire how you can convert it quickly from gravel to crushed stone production and back again.

"On the Highway 91 job, it took three D-8 Cat dozers and a scraper to feed the 293QS. The plant we were using before required only one D-8. That'll give you an idea of the difference in capacity."

You'll have a story to be proud of, too, when you work with the Universal 293QS. Producers are enthusiastic about the ability of this plant to make up for lost time. As Jed Abbott puts it, "The severity of Utah weather could mean the loss of much production, but with the Universal 293QS we have the capacity to fill larger orders, fill them faster, charge less and make more money in the long run."

Nearly everyone, like Germer, Abbott and Waldron, goes through seasonal or other costly shut-downs. Costly, that is, unless like Germer, Abbott & Waldron, you've discovered crushing equipment like the Universal 293QS — designed to recapture time lost — at a profit!

Write for complete facts on the Universal 293QS Gravel King now.

Volume production through improved design

Finished material on final belt. Exclusive Universal TwinDual roll crusher permits up to 100% wider discharge opening of the extra-large primary jaw crusher. Jaw efficiency increased by pre-screening pit-run material before entering crusher.

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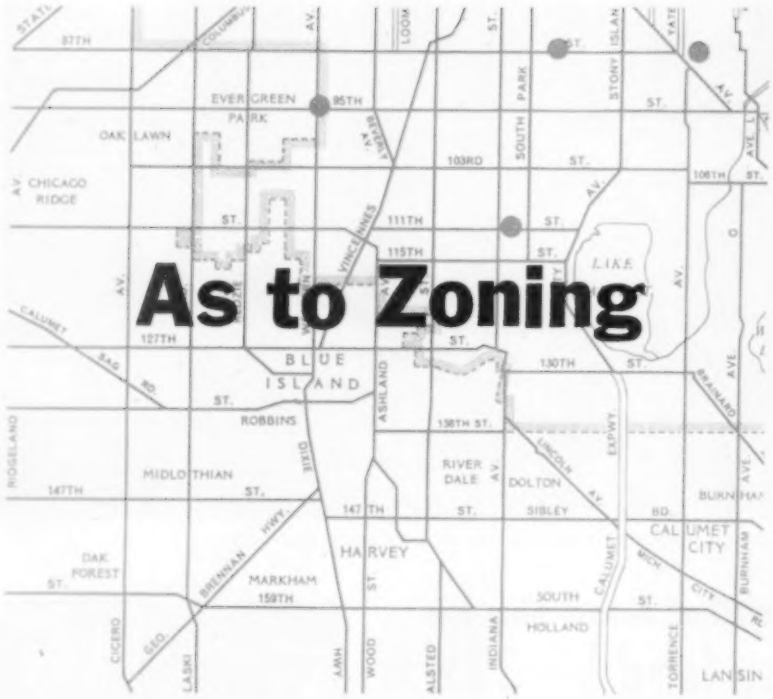

As to Zoning

By JOSEPH DIEHL FACKENTHAL
Executive Vice-President
New York Trap Rock Corporation

THE widespread adoption of zoning ordinances has become so serious a matter for both pit and quarry that some general comments as to such enactments may be useful.

We all live and hold our property subject to what is known as the police power of the state. This is a power not granted by any constitution or charter; it is the power inherent in the sovereign to provide for the safety, the health, and the general welfare of its subjects or citizens. Where, as in the case of Great Britain, there is no constitution such as that of the United States, the power is unlimited; and it may be exercised in such manner and to such an extent as the legislature may in its unfettered judgment determine. In countries possessing constitutional governments the power does not arise from the constitution but its exercise may be constitutionally limited. In such countries the question which arises is not whether the legislature possesses the power, but whether a particular exercise of it transcends the constitutional limitations.

Zoning laws and ordinances are sustained as an exercise of this police power. Limitations upon this power are in the United States contained both in the Federal Constitution and in the constitutions of the several states. Broadly speaking, these limitations provide that all people are entitled to equal protection of the laws; that no person shall be deprived of his property without due process; and that property shall not be taken for public use without just compensation. (It is interesting to note that British Acts of Parliament as to future use of land, unlike our own zoning laws, provide for adequate compensation.)

Where a zoning law is in the form of a state statute, it would be upheld as valid if the court should find that its provisions do not transgress the limitations above enumerated.

Most zoning laws, however, are not state statutes, but rather ordinances, resolutions, or other enactments of a municipality, a county, a township, a city, a village or a borough. Such a municipality has no inherent power to pass a law of this character, but must find its authority to do so in some delegation from the state, either by appropriate provision in the state constitution or in an act of the legislature granting such power. An ordinance or other municipal enactment must not only come within the constitutional limitations, but must also come within the terms of the enabling constitution or statute. Furthermore, under well established rules of law, a municipal enactment must be reasonable as a condition of validity.

The typical grant to a municipality authorizes making regulations for the purpose of promoting the health, safety, morals, or general welfare of the community. It also authorizes the regulation and restriction of the height, number of stories, and size of buildings and other structures. Additional items so regulated include the following: density of population; location and use of buildings, structures, and land for trade, industries, residence or other purposes; division of lands into districts of such number, shape, and area as may be deemed best suited to carry out the purpose of the act; and regulation and restriction (in such districts) of the erection, construction, re-construction, alteration, or use of buildings, structures, or lands. Usually these enabling statutes provide that all such regulations shall be made with reasonable consideration of the character of the district and its suitability for particular uses; also that they be formulated with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout the municipality.

Although the foregoing is a fair summary of zoning powers usually granted to municipalities and the qualifications of the grant, it is by no means to be assumed that this description would fit the situation in any given municipality; and in order to determine that situation, the enabling acts must be carefully examined in each instance.

Armed with these powers, municipalities throughout the country have enacted zoning ordinances for the purpose of preserving the rural or residential character of the community and of protecting it against the invasion of undesirable industries. These "undesirable" industries are variously described in terms of noise, dust, odor, and other real or assumed characteristics. They nearly always include quarrying and crushed stone and sand and gravel operations specifically.

In all probability the members of a community would have a right and would be acting reasonably in preserving its established characteristics and in preventing undesirable changes, but very many communities

are not content to do this but seek through zoning ordinances to make changes in the character of the community. They often attempt through severe restrictions and limitations to drive from the community, in as short a period as possible, industrial operations, even though long established there. Special efforts are made to put a speedy end to quarrying and sand and gravel operations, however long established and however important to the general economy they may be. It may be seriously questioned whether such enactments in most cases fall within the granted powers. Of course, they would be valid if appropriate for the safety, health, or morals of the community; but if the enactments are not appropropriate or related to those purposes, they might not be sustainable under the provision as to general welfare.

It may, perhaps, be taken for granted that the opening of a new quarry or a new sand and gravel pit at a location where such operations had not theretofore been carried on, may be prohibited. However, there remains the question, the ruling as to which has not as yet been conclusively settled by the courts, as to whether, within constitutional limitations, a land owner may be deprived of the right to extract valuable mineral deposits from it. The general trend of decisions would seem to indicate that such a prohibition would be sustained. What the general exercise of such a power would do to our economy is a matter for practical legislative determination.

The type of business involved in quarrying and sand and gravel operations, however, calls for special consideration. As one United States Circuit Court of Appeals has said, "There is also a substantial difference between an ordinance prohibiting manufacturing or commercial business in a residential district that may be conducted in another locality with equal profit and advantage, and an ordinance that wholly deprives the owner of land of its valuable mineral content." Extractive industries are not ambulatory and cannot be moved about at legislative will and whim. They must be carried on where suitable deposits, suitably located for commercial use, are to be found.

Established businesses have some protection as "non-conforming uses." This protection, always precarious, is now being whittled away by the growing practice of including "performance standards" in zoning ordinances.

It is well settled as a legal principle that a zoning law may not require the immediate discontinuance of an established use. The owner and operator of a quarry or a gravel pit has a vested right, of which he cannot be deprived, to continue his operation. Nevertheless, zoners consistently and persistently attempt to drive him out of business.

In the effort to carry out such a scheme, the land where the enterprise is located is included in some type of zone—residence, light manufacturing or other—in which quarrying, stone crushing, or sand and gravel pits are not permitted uses. Such operations can thereafter continue only as non-conforming uses; and to these uses serious limitations are attached, most of which would probably be sustained by the courts.

First, and perhaps the most serious—certainly the most illogical as applied to any extractive industry—is the almost standard provision that the operation shall not be extended. This limitation has in many instances been most strictly construed. It has been held by the courts that the operation may be carried on only at the precise location where it was conducted at the time of the adoption of the ordinance. In many instances, it cannot be extended to all of the land containing the deposit of useful material, although that land may have been purchased long before the enactment of the law, and operation had been commenced on a part of it.

Such a holding entirely overlooks the essential fact that an extractive industry is progressive in its very nature. Quarrying or digging gravel cannot be undertaken in all parts of a tract or deposit at the same time, nor can it stand still. As the material available at a given point is exhausted, other parts of the tract must be called into use, or the business must be abandoned. This limitation is, therefore, destructive. Its necessary consequences are to shorten the life of the business, to prohibit long-range planning, to make useless the acquisition of land containing reserves of stone or sand or gravel for future use, and to make economically impractical the large investment in plant and equipment required for modern operation.

It has also been held (although here an exception or two may be noted) that the productive capacity of a quarry or sand and gravel bank operated as a non-conforming use cannot be increased through a change in the kind of machinery used or in the method of operation. Such a change, it is said, is an unlawful extension of the use. In other words, a non-conforming use of this character is frozen; it may not grow or deveolp or increase in efficiency, however desirable such an increase might be.

Zoning ordinances, generally speaking, also provide that the right to continue a non-conforming use shall terminate if that right is not continuously exercised. A usual provision is that the non-conforming use is permanently lost if not consistently availed of for some specific period, usually one year. As to the industries here particularly in question, the right might thus be lost through a variety of causes, including, for example, a depression in the construction industry or a governmental ban on road building.

Moreover, some ordinances provide a period after which a non-conforming use may no longer be carried on. This is usually based upon an arbitrary assumed reasonable period for the amortization of the investment. Provisions of this kind have been sustained where the court was of the opinion that the period of amortization was reasonable.

However, it is apparent that such provisions could never be reasonable as to the type of business here under discussion. This is because an extractive industry cannot, as has already been said, be moved at will, as most ordinary businesses can be. Stone must be quarried and gravel must be extracted where these materials are found. The deposit of raw material may be depleted, but it cannot be amortized. The buildings and machinery which can be amortized are merely substantiary to the deposit of raw material.

It is bad enough that under the usual provisions as to non-conforming uses no new buildings shall be erected and no new machinery shall be installed; but the frequent provision that a building damaged to an extent greater than some percentage fixed in the law—by fire, storm or other casualty—cannot be restored, is disastrous to the industries here considered. An ordinary factory so damaged can be rebuilt elsewhere, upon the exemption, of course, that all available lands are not zoned against it. However, the important asset of an extractive industry is not the building, but the deposit of stone or other material. If a destroyed building, cannot be restored, the industry itself is at an end.

The matters already enumerated—and the enumeration is by no means complete—are serious enough; but even more serious are the "perform-

ance standards" which have recently become a part of zoning ordinances. A plant might be a nonconforming use in a residence district or it might be in a district where the operation of a quarry and crushing plant or a gravel and sand pit and processing plant are permitted uses; and yet, in either case, such a plant might not be able because of such performance standards to operate normally or economically. How far these standards adopted under the guise of zoning will be sustained by the courts cannot, at the moment, be predicted; but the movement toward them constitutes a grave potential danger. Of course, such standards might be sustained as falling within some municipal power outside the zoning power.

To catalog all restrictions being attempted through these performance standards would be lengthy and probably not useful, but attention should be called to some of them. These requirements, as they are being enacted, fall within a constant pattern. The days and the hours during which work may be carried on are prescribed; i.e. no work on Sundays or legal holidays, or between 7 p.m. and 7 a.m., items such as the following are also prescribed and regulated: the type of machinery which may be used, for example, that all machinery shall be operated by electricity; the amount of explosive that may be used in a quarry; the decibels of noise which may be created; the amount of dust arising from the operation (to be measured at the point of origin and not in the countryside generally); the amount of vibration which may be created and the method and place of measuring it.

One proposed ordinance, fortunately amended before adoption, provided that there should be no perceptible vibration, but that vibration should be measured at the nearest boundary of a residence district and then a gore of the operator's own property extending to a few feet from the crushing plant was zoned for residence, so that the measurement would be made at that spot. That is, perhaps, an extreme instance of what may be attempted.

Undoubtedly, enough has been said to show the nature and importance of the problem. The question, of course, is what can be done about it? A few suggestions may, perhaps, be ventured.

Aside from the endeavor prompted by civic concern and enlightened self interest, as well as by constant care and improvement in operational methods and techniques, to eliminate objectionable characteristics, in so far as possible, plus the cultivation of local good will, two other items might well be given careful consideration.

The first is the matter of education. It is a strange fact that very few people not connected with these industries have any real information about them. It is generally understood that cement and steel, for instance, are basic and necessary and that large investment and skill and effort are needed to produce them. However, while everybody knows that crushed stone, sand, and gravel are needed for many purposes, these materials are, in a curious way, taken for granted. The man in the street is not aware of what must be done to make them available when they are wanted, and he does not know their importance, or their indispensable place in our economy. Some means should be sought to correct this situation.

A second consideration might perhaps be one of the results of what has just been suggested—rescuing these industries from haphazard and frequently ill-informed local regulation by zoning or otherwise. The whole matter should be given state-

(*Continued on page* 160)

Madison

(*From page* 124)

in the 1½-to 6-in. range must make up at least 50 percent of a batch. Considerable latitude is allowed for the proportions of finer material, including the sand. Air-entrainment agents are also employed.

Specifications demand a concrete temperature of 65 deg. F. at placement, and the contractor is meeting this requirement by air-cooling the aggregates and chilling the mixing water during the warmer months. Cold water is also circulated through 1-in. piping in each lift. The refrigeration system involves five 100-hp. and two 50-hp. Freon units and 100- and 150-hp. ammonia units.

Concrete is bucket-delivered by 12-ton Davenport diesel locomotives operating along the top of a curved trestle and placed by an American whirley gantry.

Monticello Dam will be 304 ft. high and 1,000 ft. long at the crest. Base thickness of the concrete is 90 ft., tapering to 12 ft. at the top.

B. P. Bellport is construction engineer for the Bureau of Reclamation. Douglas Baker is project manager and Ford Johnson, general superintendent for the contractors.

The Madison Sand & Gravel Co. is owned by C. M. Syar and Jens and Helge Harms. William Walker is superintendent of plants. The concern also owns the Fairfield Concrete Company, which has batch plants at Fairfield and other locations, and is currently operating a crusher-run-base plant near Winters, Calif. The Harms brothers are also engaged in highway contracting and operate portable aggregate plants in this service.

This two-flight radial conveyor build up a huge pile of specification sand at the Madison plant. A typical truck-and-trailer unit on the plant-to-project run is in the foreground.

A.R.B.A. Show

(From page 111)

vide a highly non-skid surface; and it may be applied on either rigid or flexible type pavements which have become badly abraded, have developed numerous small cracks, or have become slick.

The erosion problem on newly-seeded sloped areas adjacent to new pavement construction has also been met by the use of liquid asphalt. The method employed involves the simultaneous blowing of a straw mulch and asphalt onto the slope.*

Secondary road improvement with calcium chloride stabilization was discussed by B. R. Gebhart, Mercer County Engineer, Celina, Ohio. With limited funds available, concentration has been made on providing a structural base adequate for future traffic as well as current travel since most of the capital investment is represented in the base.

Experiment and study led to the use of calcium chloride for stabilization, and both cost and results have proven very satisfactory. Benefits observed were said to include the following: a saving of surfacing material that would otherwise be lost; a resulting dust-free, all-weather road with a hard, dense surface when used as a wearing course; simplification of engineering control; and an improved performance record of blacktop surfacing which apparently needs much less surface patching then when placed over other base courses.

Soil-cement applications in county road work was described by J. T. Sharpensteen, county highway engineer, and E. J. Renier, maintenance engineer, Genesee County, Mich. As in many other areas, their county commission has lacked sufficient funds to improve gravel secondary roads with concrete or asphalt surfaces of a character that would carry the rapidly increasing traffic volume.

In 1951, experiments were started with soil-cement as an approach to the problem. On the basis of favorable results obtained on the first small 2-mile project—consisting of gravel surface converted to a soil-cement (8 percent of portland cement by volume) base with a bituminous wearing surface—additional projects were undertaken during the next five years.

All proved highly satisfactory, and were carried out at an average cost of $1.30 per sq. yd. As a result of these experiments, a more ambitious program is now current, using improved methods of spreading and mixing, and the average cost has been $11,523.60 per mile, or $1.01 per sq. yd.

To date the cost of surface maintenance has been negligible, the performance of this type of road has met with public approval, and there is a growing demand for an increase in such construction.

W. H. Taylor Jr., materials design engineer, Louisiana Department of Highways, described the recent use of lime stabilization on Louisiana road projects. The first application (in 1952) was that of conditioning soils so they could be stabilized with portland cement. Subsequently, lime has been used as a stabilizing agent or a means of reducing the plastic index of soils and base materials. Satisfactory results were achieved with these applications.

The most recent use involved the problem of organic muck, which has long been a common difficulty in southern Louisiana. On the basis of laboratory tests which showed that lime reacted with this soil, a test section was built. The previous sand and shell surfacing was removed from the base, and lime was then spread. The soil-lime sub-base was then mixed and compacted prior to replacing the former surfacing. The lime stabilization eliminated the earlier problem of muck working its way up into the base materials, with resultant soft spots or failures.

* See *New Kansas Turnpike*, PIT AND QUARRY, Sept., 1956, pp. 118-120.

A. P. Green Fire Brick Co. Acquires Remmey Concern

The Richard C. Remmey Son Company, Philadelphia, Pa., has been acquired by the A. P. Green Fire Brick Company of Mexico, Mo. Green will operate Remmey as a separate Corporation, with John G. Remmey as vice-president and general manager.

Robert H. Remmey, former president of the Philadelphia firm, will remain with the company as a consultant. G. Bickley Remmey will be in charge of research development and engineering, and Francis G. Remmey will be in charge of operations.

The North American Cement Corporation reports net sales of $17,543,654 for the year ended December 31, compared with $15,939,871. Net income for 1956 totalled $2,077,687, compared with $2,008,912 for 1955.

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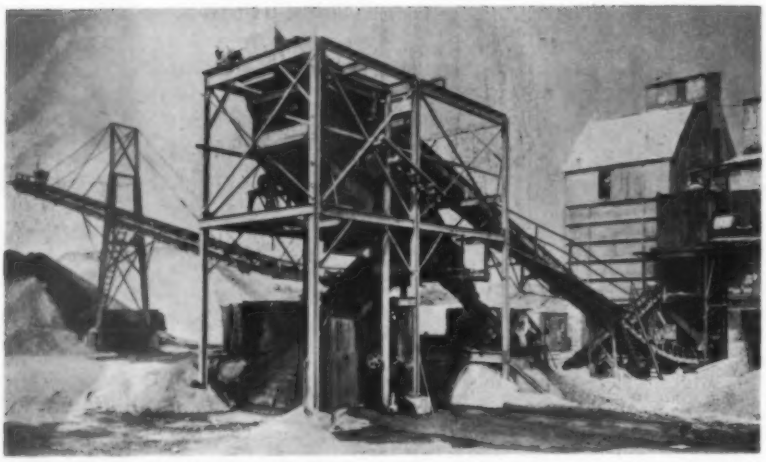
Waste Fines Reclaimed at a Profit

special screening setup recovers 90 percent of an 80,000-ton stockpile

By H. M. BINKLEY
President, Bradford Hills Quarry
and
M. G. JONES
Allis-Chalmers Mfg. Co.



An overall view of the Bradford Hills Quarry washing-reclaiming plant shows the pool washing screen, the roll crusher and the 30-in. conveyor (right). The conveyor at the left is presently being used to stockpile Pa. 1-B stone. Buildings in the background enclose bins of sized stone.

HERE at Bradford Hills Quarry, Dowington, Pa., we had encountered a run of exceptionally dirty, undesirable, and seemingly unprofitable scalpings of dolomite stone. Removing this material from the cleaner stone before processing was necessary in working the upper floor of the quarry and is 100 percent passing 1¾-in. screen opening. The unusable stockpile had reached such proportions that it had become a disposal problem.

While the stockpile problem was under consideration, normal operations continued in the following manner. After the dolomite stone is blasted, we load 22-ton capacity Euclids with a 2½-cu. yd. or a 1½-cu. yd. shovel. The trucks dump into a 4- by 16-ft. combination apron feeder and hopper. From the hopper the stone goes over an 8-ft. bar grizzly with 1¾-in. spacing. Grizzly undersize is conveyed through the regular screening process to storage bins. The clean stone is processed to commercial sizes after it goes through an impact crusher.

Stone is produced to meet specifications in Delaware, Maryland, New Jersey, Virginia, and Pennsylvania. To help accomplish this, a 6- by 14-ft. double-deck Ripl-Flo screen has been installed since the spring of 1955. This model SH Allis-Chalmers pool washing screen is equipped with three horizontal washing troughs on the top deck and three on the bottom deck. Water sprays directed at the troughs set up a whirling and swirling motion. This line motion, together with the vibration of the screen, results in a concentrated scrubbing action. As a result a portion passes through the screen, with the fines in suspension, and the remainder is conveyed by water to the next trough. This action is repeated for each of the succeeding troughs of both decks.

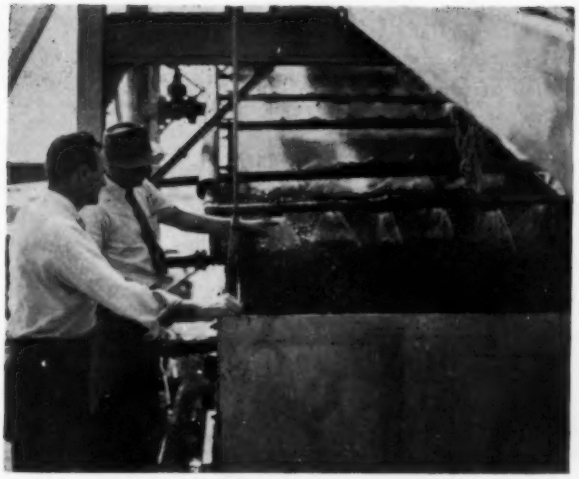
The first, second, and third sections of the top deck have 3/16-in. square openings, and the fourth section has 1/2-in. square openings of standard wire. The product passing through the slotted bottom deck of the screen is used as ID-2 filler for bituminous concrete. This screen has a 45-in. long auxiliary deck between the two decks at the discharge end of the screen. This auxiliary has 3/16-in. square openings.

There are five spray pipes on the top deck and three on the bottom deck. Each pipe has six 5/16-in. nozzles; the total water used is 500 g.p.m. at 30 p.s.i. The screen has a 10-hp. motor and was installed at a 20-deg. slope.

During normal operations this screen is fed by a 30-in. conveyor belt directly from storage bins holding previously sized stone that needs washing. The screen discharges washed stone directly into trucks. All minus 0.080-in. by 2-in. material passing through the bottom deck screen is pumped to a 48-in. sand drag. The sand drag separates the dirt and removes and dewaters the fines to a clean, finished product.

Shortly after the screen was installed for normal quarry operations,

A partial view of the 80,000-ton stockpile accumulated from working the upper floor of the quarry; it was originally thought to be unusable.



A closeup of the 6- by 14-ft. double-deck pool washing screen, which has three horizontal washing troughs and spray bars on both decks. Each bar has six nozzles.

John Robinson (center), plant superintendent, and John F. Cibula (right), production engineer in charge of operations, with M. G. Jones (left), one of the co-authors.

a request was received to supply a quantity of Pennsylvania State 1B stone. Specifications on this material call for 100 percent passing ½-in., 75 to 100 percent passing ⅜-in., 10 to 30 percent passing 4-mesh, and 0 to 8 percent passing 8-mesh. This particular size of stone was a scarce item in the southeastern part of the state at this particular time.

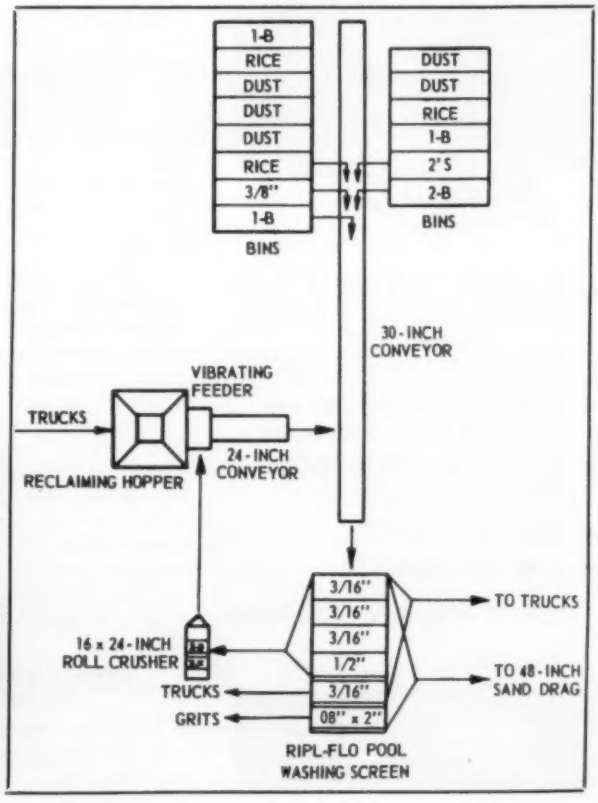
One of the places we checked was the 80,000-ton stockpile of scalpings. The screen analysis showed that at least 76 percent of the material would pass through a ½-in. mesh screen. All of the material would pass 1¾-in. screen openings, and as much as 32 percent would pass a 20-mesh screen. The actual analysis follows:

Percentage Passing	Opening
100	1¾ in.
96	1 in.
91	¾ in.
85	⅝ in.
76	½ in.
66	⅜ in.
51	4 mesh
32	20 mesh
11	40 mesh

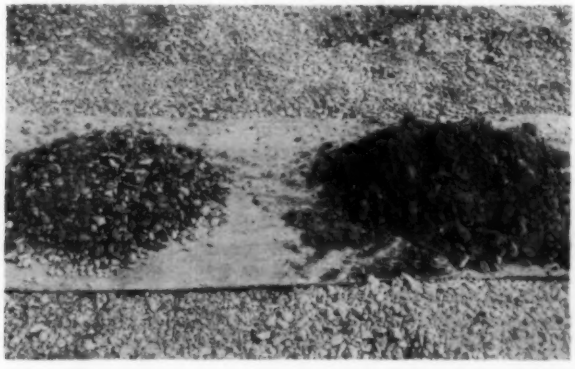
The screen analysis definitely indicated that the size specifications for Pennsylvania 1B stone would be met. The high percentage of the waste pile stone which could be used justified going ahead with the plans. However, this stone was dirty, and all of it had to be washed.

(*Continued on page* 150)

Right: How normal quarry operation is switched to the reclaiming stockpile. Normally the bins at the top feed a 30-in. conveyor belt, which feeds a 6- by 14-ft. screen. When operating in this manner, the screen is used for washing and removing minus 0.08- by 2-in. material (flow lines at the right of the screen). When the 80,000-ton stockpile is being reclaimed, bin feed to the 30-in. conveyor is stopped, but the conveyor continues to run. Then the reclaiming hopper starts to feed the 30-in. conveyor via a 24-in. conveyor, and the screen is used for washing and sizing (flow lines to the left of the screen), as well as for removing 0.08- by 2-in. material, which goes to a 48-in. sand drag.



Below: The right pile is a stockpile sample; the left one is the same stone after washing.



Accident Prevention

(*From page* 116)

METHODS EMPLOYED

The reduction of accidents in the Lime Division to the present time has been accomplished by several means.

Organization An organized drive has been made to convince everyone of the value of accident prevention and to obtain their willing and active co-operation in any methods which might be introduced to prevent accidents.

Propaganda Safety education is essentially the kingpin of our whole campaign and is the foundation on which our accident prevention drive is built.

Competition The competitive spirit is evoked by giving each plant or section of a plant information to enable it to compare its record with others. The value of actual safety competitions and their effect in reducing accidents is not quite clear; but we believe that some value is obtained by creating a desire to see the record of one's plant in a favorable position among the rest. In any case, the contribution of safety competitions to safety education is a valuable one and in itself justifies their adoption.

Rewards for Special Efforts One major drawback to safety competitions is that the trophy which is competed for can be won by only one competitor in each competition period. The efforts made by other plants may have been equal or even greater than the winning plant, but the efforts of all other plants must go largely unrecognized. A feeling of disappointment may result, which may destroy the competitive spirit.

Recognizing this, we in the Lime Division, have devised a scheme to run parallel with our safety competitions which enables the company to show its appreciation in a tangible manner to every plant which has reached a certain minimum standard, and the rewards are proportional to the improvement beyond that minimum standard.

Accident Investigation In accident prevention one of the most important requirements is really effective, thorough investigation of all accidents which have occurred and also the investigation of near-accidents. By near-accidents I mean unforseen occurrences which could easily have caused injury to workers, but by a stroke of good fortune did not do so.

In both cases the investigations have, as a primary objective, the obtaining of information which will lead to positive steps to prevent a recurrence. In one case the accident is investigated after it has happened and in the other before it happens. I must emphasize that the investigation of what *might* have been an accident is in no way less important or urgent that the investigation of an actual injury. What is of importance is that all investigations should be designed to elicit the maximum, correct information on every dangerous incident, whether or not it results in actual injury.

The form the investigation will take and the people who will take part must be decided by each individual concern, so as to be most suited to their particular requirements. All I would stress is that the entire success of any campaign to prevent accidents rests in a major degree on really efficient investigation.

DIRECT AND INDIRECT ADVANTAGES

Here are some compelling reasons for giving maximum attention to safety. Safety is generally considered to mean the prevention of accidents, but it is much more than that. Accidents arise from faults, faults in design, operation, supervision, and training; and these faults are the basic causes of inefficiency. A safety campaign brings these faults to light and by eliminating them adds greatly to overall operational efficiency.

Unsafe conditions which lead to accidents are also frequently the cause of costly breakdowns in the plant.

The productivity of the workers is increased because the safe way of doing a job is the best way, leading to improved production, less scrap, and fewer damaged machines. Moreover, self-preservation dictates that dangerous jobs be done slowly.

Employee relations are improved because safety work provides an ideal subject for co-operation between management and labor.

Safety improves the morale of the employees by providing better and safer conditions of work. Plants with good conditions, guarded machines, good housekeeping, adequate medical facilities, and effective safety programs are those whose employees have a high moral and, in general, do efficient work.

Safety helps to train supervision. When a supervisor seeks to foster an awareness of safety amongst his men, he is not only promoting safety; he is also learning the principles of leadership.

Safety increases the loyalty of employees. When management demonstrates clearly its intention to provide better and safer conditions, the workers are—in general—not slow to respond.

Safety improves plant housekeeping. A safe plant is generally more orderly and of improved appearance. Tidiness and safety are complementary. One creates the other.

Saskatchewan Gets Cement From New $8,000,000 Plant

Saskatchewan now has a cement plant at Regina, an $8,000,000 installation completed recently. Organized early in 1956, the company started construction of the plant in March, and cement production began last September.

Limestone from Manitoba, iron ore from British Columbia, and clay from Saskatchewan are raw materials used in the manufacture of the cement. Construction of the plant was underwritten by the provincial government, which backed the venture to the extent of granting a $5,000,000 loan guarantee.

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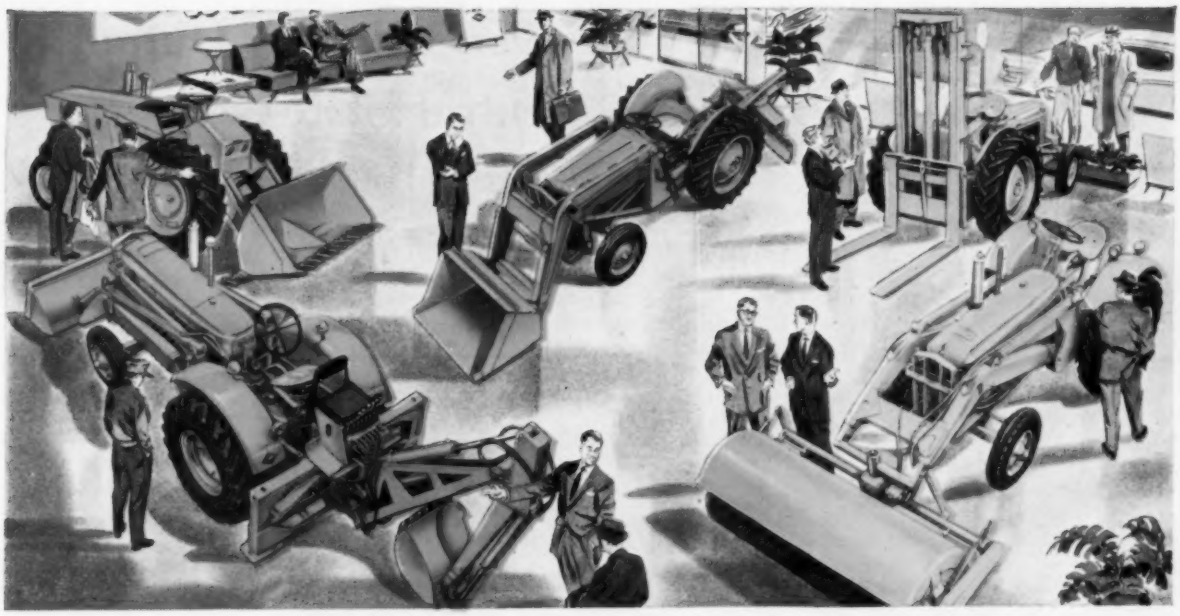

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Preliminary Report of 1956 Mineral Output In Five North Central States

THE preliminary report for Indiana mineral production in 1956 was prepared under a cooperative agreement between the United States Bureau of Mines and the Division of Geological Survey, Indiana Department of Conservation.

Indiana Mineral production was estimated at nearly $200,000,000 in 1956 ($197,300,000) according to the U. S. Bureau of Mines. This represents an increase of 6 percent over the all-time high of $186,000,000 in 1955. Nearly every mineral commodity registered an increase over the previous year's output. The notable exception was dimension limestone. Crushed stone production was 4 percent greater than in 1955.

The leading minerals produced in Indiana in 1956 were cement, clay, coal, petroleum, sand and gravel, and stone. Nonmetallic minerals accounted for 51 percent of the total, and mineral fuels for the balance.

The National Gypsum Co. and United States Gypsum Co. made a substantial contribution to the state's mineral output by the first full year's operation of their gypsum mines in Martin County.

Michigan Mineral production in Michigan in 1956 had an estimated value of $390,000,000, according to the Bureau of Mines. The total value of minerals produced was 7 percent greater than in 1955, when output was valued at $364,000,000. Copper showed an increase in value of output of 38 percent, sand and gravel 28 percent, and portland cement 22 percent. Iron ore production, reflecting the work stoppage caused by the steel and shipping strikes, decreased about 10 percent in value; and petroleum and natural gas dropped slightly.

Iron ore continued to rank first in value of minerals produced, followed by cement, copper, sand and gravel, salt, petroleum, and stone. Of the total value of output, nonmetallic minerals accounted for 54 percent, metals 37 percent, and fuels 9 percent. In 1955 the percentage breakdown of values was: nonmetallics 51 percent, metals 39 percent, and fuels 10 percent.

Michigan produces a variety of nonmetallic minerals. The most important include cement, clay, gypsum, lime, sand and gravel, and stone. They represent 37 percent of the value of the state's mineral output.

Salines from brine wells are the source of raw materials in the production of several chemicals, notably bromine and magnesium compounds and common salt. The value

(*Continued on page* 138)

Mineral Production in Michigan, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Cement:				
Portland	18,128,068	$52,352,772	21,000,000	$64,050,000
Masonry	1,610,332	5,695,606	1,775,000	6,460,000
Clay	1,937,593	2,019,007	2,225,000	2,300,000
Copper (recoverable content of ores, etc.)	50,066	37,349,236	61,450	51,495,100
Gypsum (crude)	1,762,105	5,660,587	1,790,000	5,750,000
Iron ore (usable) long tons, gross weight	14,143,509	104,258,188	12,334,552	[3]
Magnesium compounds (except for metal	46,336	5,063,621	48,500	5,500,000
Marl, calcareous	119,313	57,176	140,000	69,000
Natural gas (million cu. ft.)	6,900	1,240,000	8,700	1,200,000
Petroleum (crude) .....42-gal. bbl.	11,267	32,897,000	10,753	31,400,000
Salt (common)	4,975,442	31,668,351	5,000,000	32,000,000
Sand and gravel[4]	37,214,459	29,490,775	42,000,000	37,800,000
Silver (troy ounces)	478,000	432,614	365,000	331,158
Stone	33,635,612	28,908,784	33,700,000	29,000,000
Undistributed; bromine, calcium chloride and calcium magnesium chloride, gemstones, lime, magnesium chloride, natural gasoline, L-P gases, peat and potassium salts		31,847,713		127,950,250
Total Michigan[5]		364,067,000		389,706,000

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Subject to revision.
[3]Included with "Undistributed."
[4]Includes friable sandstone.
[5]Total has been adjusted to eliminate duplication of value of clays and limestone used in the manufacture of cement and lime.

Mineral Production in Indiana, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Clay	1,729,299	$ 2,938,010	2,000,000	$ 3,450,000
Coal[3]	16,149,310	58,000,085	17,150,000	[4]
Marl, calcareous	17,080	10,543	17,000	11,000
Natural gas .....(Million cu. ft.	800	56,000	1,300	200,000
Petroleum (crude) .....(42-gal. bbl.)	11,089	32,270,000	11,156	32,130,000
Sand and gravel	17,081,982	14,306,348	18,000,000	15,600,000
Stone	14,124,406	36,679,589	14,550,000	30,800,000
Undistributed: abrasive stone, cement, coal (1956), gypsum, lime, peat, and recoverable sulphur		46,189,944		117,786,000
Total Indiana[5]		185,981,598		197,300,000

[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Subject to revision.
[3]Related only to mines with an annual production of 1,000 tons or more.
[4]Included with "Undistributed."
[5]The total has been adjusted to eliminate duplication of value of clays and stone used in the manufacture of cement.

HD-21 crawler tractor, 204 net engine hp
315 scraper, 20 yd heaped, 15 struck

YOU CAN STRIP OVERBURDEN AND RECLAIM LAND PROFITABLY

with this crawler tractor-scraper team

There is a marked trend toward reclaiming worked-out pits—and a parallel trend toward the use of Allis-Chalmers crawler tractors and scrapers. Both are examples of wise management.

Land Reclamation—already a law in many states—eliminates to a large extent the scarred and worthless landscapes left by abandoned pits and piles of overburden. Properly reclaimed land usually returns far more than the cost of reclamation in higher resale value. Even where pits can be only partially filled, the land may be seeded profitably for pasture.

Allis-Chalmers HD-21 Crawler Tractor and 315 Scraper are ideal for this type of operation. This team is mobile and flexible enough to strip overburden and spread it immediately in a worked-out area of the pit. This eliminates the need of re-handling overburden and of calling in specialized equipment.

Curved and offset cutting edge on the scraper, plus torque converter drive on the tractor, are just two of many features that put this Allis-Chalmers team in a class by itself for this type of work. Let your Allis Chalmers construction machinery dealer give you the details. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

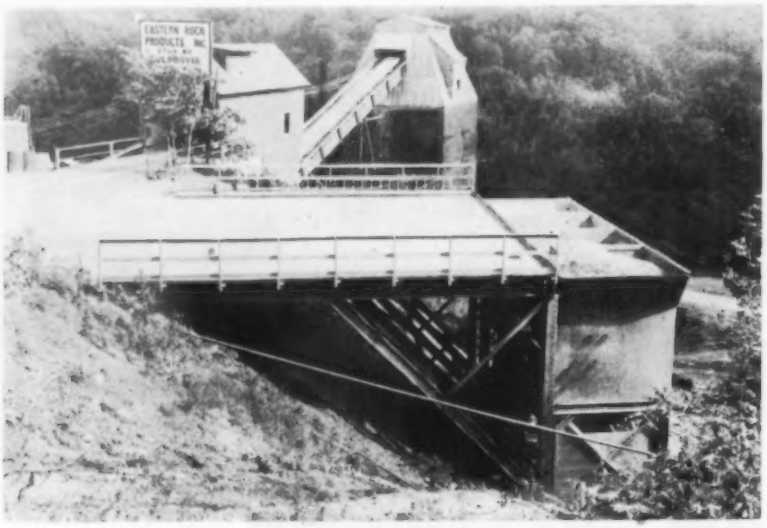
Another ON THE SPOT Report

New Asphalt Plant Of Eastern Rock Products Uses Largest Hot Screen

By ROY L. PECK

OFFICIALS of Eastern Rock Products, Inc., Utica, N. Y., anticipating heavy requirements for the accelerated national and state highway program, completed the installation of a new asphalt mixing plant in August, 1956, at their Oriskany Falls, N. Y., stone plant. One of the features of the distinctly modern setup is the use of probably the largest screen with enclosed horizontal drop deck construction ever furnished on such a plant. It has an estimated capacity of 250 t.p.h. of 5 separations.

The asphalt plant was built in connection with the major modernization of the 35-year-old parent plant, accomplished for the most part over the last three years.* Construction of the plant was started in January, 1956, and production has gradually increased since August, 1956, to a point approaching the maximum capacity.



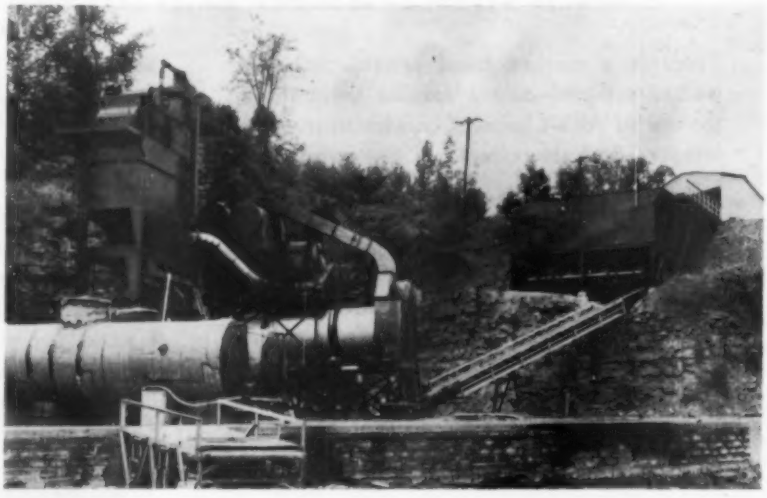
The ramp and receiving bins for cold stone storage at the new batch mix asphalt plant of Eastern Rock Products, Inc., Oriskany Falls, N.Y. Materials come via truck from the crushed stone plant of the company nearby.

Basically, the plant is a standard Model T-60, furnished by Hetherington and Berner, Inc., Indianapolis, Ind., and with the exception of the large screen mentioned, it is equipped with their standard units. It is located only a few hundred yards up the road from the stone plant, and receives its aggregate of ½-in. to 200-mesh size in company trucks which dump from a cross ramp into a four-compartment steel bin each section of which holds 44 tons.

The ramp and bin erection was done by company forces. The particular location of these dry material bins was decided on to take advantage of a short road haul for the stone, and to utilize gravity to the fullest extent in the movement of stone products from the bin down to the dryer, some 50 ft. below the road. The site required the minimum of excavation and leveling to provide truck and rail outlets for finished bituminous asphalt products.

A variable speed feeder is installed under each hopper-bottomed bin, feeding materials onto a 24-in. by 33-ft. cross belt conveyor which discharges onto a 24-in. wide inclined

*See PIT AND QUARRY, page 172, January, 1956.



A general view of the plant from below, showing the cold stone bins, the gravity-operated belt, the cold elevator to the dryer, asphalt storage tanks (left) and the main plant.

belt conveyor. This belt lowers the materials to the boot of the bucket elevator serving the dryer. The belt is rated at 180 t.p.h.

The inclined conveyor is equipped with automatic electric brakes on the tail pulley drive, so that it can be stopped at any moment to avoid a pileup of stone at its lower end. The whole conveyor setup, including the cross conveyor under the bins, as well as the inclined conveyor and bucket elevator, is tied in electrically with the plant production, so that when the cold feed into the dryer is shut off, the rest of the flow of stone from the bins is automatically stopped. To avoid any build-up or bridging of the fine stone in the upper bin, this compartment is equipped with Syntron Model V-75 electric vibrators.

The screen located at the top of the asphalt plant is a Deister Machine Model UF-4516 screen, equipped with four 5- by 16-ft. decks. The top cloth at present has 9/16-in. square openings; the deck next below this has 5/16-in. square openings; the third deck has ⅛- by 2-in. Ty-Rod screen cloth; the bottom deck is equipped with Ty-Rod 20-mesh slotted cloth, and is only about ¾ the length of the other three decks.

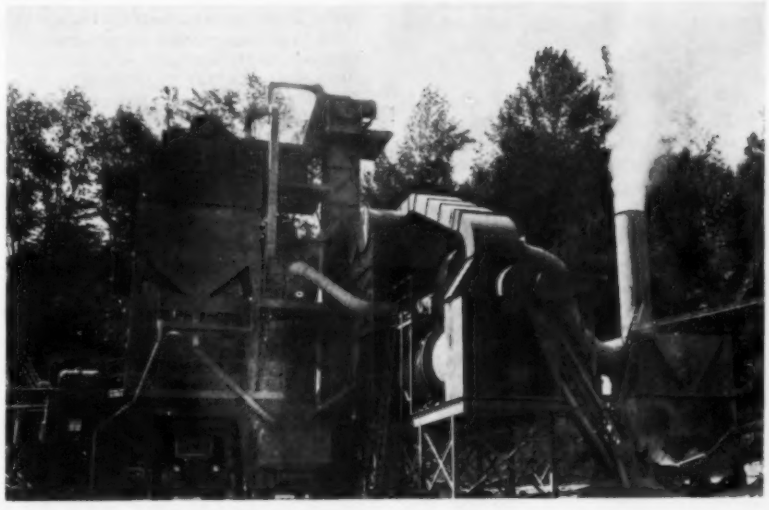
This screen has no reject section, and all the separations are dropped to the hot aggregate storage bins. The average temperature of the aggregates passing over this screen is 350 deg. F. The screen is driven by a Louis Allis 25-hp., 1,800 r.p.m. 440/3/60 electric motor, driving three No. C-105 matched V-belts.

The flat screen provides excess screening capacity; it is carefully balanced to eliminate vibration of the plant structure, and is fully enclosed to retain dust and heat. A large four-compartment bin installed below the screen provides surge capacity which is necessary for uninterrupted high production. Under this surge bin is the batch mixing and weighing system, for weighing each batch. A fully automatic Fluidometer metering and control device was installed for adding asphalt to the mix with an automatic cycle control for batching. A twin-shaft batch-type pug mill mixer below handles the full rated capacity.

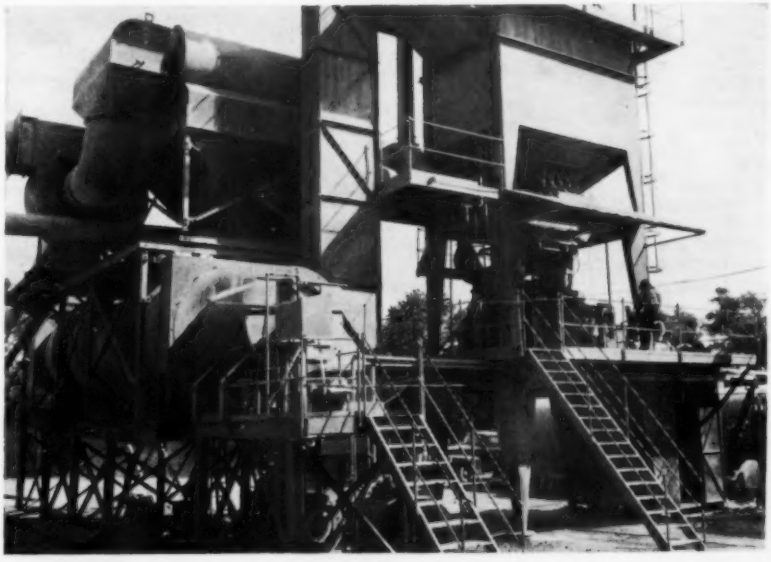
The dryer is 88 in. in diameter by 30 ft. in length. The drive on the dryer consists of trunnion rolls, each individually driven with friction drives by four 20-hp. motors operating at 1,800 r.p.m. through Dodge torque arm speed reducers. This type of drive eliminates vibration and reduces maintenance costs. A Childers Model D-100 circulatory hot oil heater and dryer are equipped with Hopkins Brothers burners, supplied by General Combustion Equipment Co. Heating the dry stone requires 1 gal. of No. 5 oil per ton of stone. A Hopkins Brothers fuel oil preheater preheats the oil sup-

(*Continued on page* 144)

Bernie Elmer, plant superintendent, with two visitors, William Tarbell, Buffalo (left), and D. K. Howe, the dealer who sold the plant to the company.



The plant in operation. This view shows the additional dust collector system (right), the feed end of the dryer, the hot screen and storage bins (top), and the mixing controls (lower left).



Looking toward the loading end of the dryer, hot elevator (center), and exhaust systems (left).

Mineral Output

(*From page* 134)

of salt and salines produced accounted for 17 percent of the 1956 dollar total for mineral production.

Michigan mineral output data were prepared through the cooperation of the Bureau of Mines and the Department of Conservation of Michigan.

Illinois Mineral production in Illinois in 1956 was valued at $571,000,000, an increase of about 7 percent over 1955, according to the Bureau of Mines. Increases in production and total values were recorded for portland and masonry cement, coal, fluorspar, natural-gas liquids, crude petroleum, sand and gravel, stone, and zinc. Slight decreases were indicated for clays, lead, lime, natural gas, and silver. Production of peat, sulphur, and tripoli in 1956 remained at about the same levels as the previous year. Petroleum led in total value of production, followed by coal, limestone, sand and gravel, cement, natural-gas liquids, lime, and fluorspar in that order. Of the total value of production, fuels accounted for 78 percent, nonmetallic minerals 21 percent, and metals 1 percent.

Production of limestone in Illinois in 1956 was slightly less than 31,000,000 tons, an increase of 7 percent over 1955. Principal uses of limestone were for concrete aggregate and roadstone, and for agricultural use. Sand and gravel output, tonnagewise, increased 20 percent over 1955. Production of cement in 1956 also increased over the previous year. Increases in cement, sand and gravel, and stone production were attributed chiefly to the continued rise in road and building construction. Fluorspar production in 1956 was estimated to be about 2 percent greater than in 1955. An increase of about $5 a ton for crude ore by custom mills during the latter half of the year stimulated production by operators of smaller mines in the Hardin County fluorspar area. Clays and lime were the only nonmetals falling below 1955.

Mineral Production in Illinois, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Cement:				
portland ....376-lb. bbl.	8,654,735	$22,886,351	9,000,000	$26,100,000
masonry ....376-lb. bbl.	742,363	2,145,170	750,000	2,700,000
Clays	2,338,579	3,978,972	2,100,000	3,570,000
Coal[3]	45,932,114	167,937,815	47,935,000	[4]
Fluorspar	166,337	7,838,471	170,000	8,300,000
Lead (recoverable content of ores, etc.)	4,544	1,354,112	4,125	1,320,000
Lime	644,181	9,416,136	632,000	9,240,000
Natural gas (million cu. ft.)	10,000	1,500,000	8,700	1,200,000
Petroleum (crude) thousand 42-gal. bbl.	81,610	237,490,000	82,765	238,200,000
Sand and gravel	26,362,360	28,138,973	31,600,000	33,200,000
Silver ....troy ounces	3,075	2,783	1,580	1,430
Stone	28,865,724	35,621,394	30,900,000	38,200,000
Zinc (recoverable content of ores, etc.)	21,700	5,338,200	23,985	6,475,950
Undistributed: Coal (1956), natural-gas, liquids, peat, sulphur, and tripoli..		13,612,501		204,447,000
Total Illinois[5]		535,022,000		570,787,000

[1]Production as measured by mine shipments, sales or marketable production (including consumption by producers).
[2]Subject to revision.
[3]Exclusive of mines producing less than 1,000 tons.
[4]Included with "Undistributed."
[5]Total value has been adjusted to eliminate duplication of clays and limestone used in the manufacture of cement and lime.

Statistics on Illinois mineral production were prepared co-operatively by the Bureau of Mines and the Geological Survey Division of Illinois.

Wisconsin Wisconsin mineral output in 1956 was valued at approximately $66,000,000, the same as that recorded in 1955, according to the Bureau of Mines. Substantial increases in production and total values of lead and zinc ores were offset by the decrease in shipments of iron ore. Total values of other mineral commodities produced in 1956 remained about the same as in the previous year, with slight increases recorded for cement, clays, lime, and marl.

In value, nonmetallic minerals accounted for approximately 72 percent of the total mineral output in 1956. Preliminary data for 1956 indicate slight increases in production and total values of cement, clays, lime, and marl. The estimated tonnage of sand and gravel produced in 1956 was below that of 1955, but the value increased slightly. Total production and value of stone products (including basalt, granite, limestone, sandstone, grinding pebbles, and tube-mill liners) decreased slightly from the 1955 level.

Wisconsin mineral statistics were compiled through the co-operation of the Bureau of Mines and the Geological and Natural History Survey of Wisconsin.

Mineral Production in Wisconsin, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Clays	165,088	$ 166,030	170,000	$ 170,000
Iron ore (usable) long tons	1,886,029	[3]	1,491,054	[3]
Lead (recoverable content of ores, etc.)	1,948	580,504	2,725	872,000
Lime	134,635	1,767,536	143,000	1,880,000
Marl, calcareous	14,087	7,330	16,000	9,000
Sand and gravel	27,978,335	19,958,450	26,000,000	20,000,000
Stone (except basalt)	12,180,452	18,842,272	11,250,000	18,712,000
Zinc (recoverable content or ores etc.)	18,326	4,508,196	24,065	6,497,550
Undistributed: Abrasive stone (grinding pebbles, tube-mill liners), basalt cement, gem stones (1955), iron ore, and pyrite cinder		20,614,962		18,270,878
Total Wisconsin[4]		65,900,000		65,865,000

[1]Production as measured by mine shipments, sales or marketable production (including consumption by producers).
[2]Subject to revision.
[3]Included with "Undistributed."
[4]Total value has been adjusted to eliminate duplication of value of clays and limestone used in the manufacture of cement and lime.

Iowa The value of minerals produced in Iowa in 1956 was estimated to be $67,300,000, about 6 percent greater than in 1955, ac-

(*Continued on page* 144)

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

PETRO-ENGINEERING SERVICE, a comprehensive, cost-free service providing practical assistance on problems involving fuels, lubricants, and other petroleum products, offered by the *Gulf Oil Corporation,* is explained in a 24-page, illustrated booklet. (1)

"ROPE DOPE" is the title of a series of educational bulletins published by the *Union Wire Rope Corporation.* In Vol. No. 5 an accumulation of recommended practices has been re-organized and is carried in sequence through 7 bulletins. Rope Dope No. 1 contains a new formula for predetermining the relative service life of different rope constructions. (2)

HI-WEIGH MODEL 37-20 BELT-TYPE GRAVEMETRIC FEEDERS for continuous high capacity feeding and weighing processes are illustrated in a booklet issued by the *Omega Machine Company.* Advantages, principles of operation, and the Sens-A-Gram controller are described. (3)

A NEW SUMP PUMP MOTOR that can be operated while completely submerged in water is available from the *General Electric Company.* Its portable and water-resistant design make it suitable for excavation. More information is available from the manufacturer. (4)

"SUPER CORDURA" HIGH TENACITY RAYON for bag manufacture and closure is featured in literature offered by the manufacturer, *E. I. du Pont de Nemours & Co., Inc.* 1900 Denier "Super Cordura" is a strong, tough, man-made fiber, with high wet and dry strength, produced to pre-determined specifications. (5)

CAST-WELD AND FABRICATED DIPPERS are featured in an illustrated bulletin released by the *Renner Manufacturing Company.* Shovel and trench hoe dippers are illustrated and described, and specifications are included. (6)

"CUMMINS PT FUEL INJECTION SYSTEM" is the title of a booklet published by the *Cummins Engine Company, Inc.* The colorfully illustrated booklet contains cutaway views of the four PT fuel pump assemblies, as well as the PT injector. A section is devoted to optional governor arrangements. (7)

EQUIPMENT FOR THE SAND, GRAVEL, AND QUARRY INDUSTRIES is included in a 20-page bulletin issued by the *Denver Equipment Company.* The bulletin outlines Denver's laboratory testing services and includes descriptions of crushing, grinding, screening, classifying, materials-handling, and portable machinery. (8)

RELIEF-TYPE FITTINGS, manufactured by the *Keystone Lubricating Company,* are described in a bulletin entitled "The Keystone RT Fitting . . . Simplified Bearing Lubrication." Features are illustrated, and a table of test results is included. (9)

SCREW-KING SCREW CONVEYOR DRIVES are covered in a catalog offered by the *American Pulley Company.* The catalog simplifies the selection of drives for screw conveyors by outlining directions and presenting tables for the design of a complete drive. (10)

UNIFLEX, MULTIFLEX, AND MAXIFLEX WIRE ROPE SLINGS are described in three folders available from the *Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corporation.* The folders contain suggested applications and ordering specifications for wire rope slings. (11)

A NEW DUAL-FLOW ROTARY DRYER, manufactured by *Carpco Manufacturing, Inc.,* is described in a single sheet bulletin. Complete dimensions and specifications for the small RD 1020 dryer, capable of evaporating 200 lb. of water per hour, and the larger RD 1430 dryer, capable of evaporating 400 lb. of water per hour, are included. (12)

"REXARC ENGINEERED TOUGHNESS," a 20-page manual on Rexarc hardfacing and manganese electrodes, is now available from *The Sight Feed Generator Company.* Typical buildup and hardfacing applications for better wear resistance are illustrated. Recommended application procedures are shown, with the type and quantity of material required, and the range of machine settings for each. (13)

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Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

BABBITT METALS, made by the Blyco process, are described in a bulletin offered by *Joseph T. Ryerson & Son, Inc.* The bulletin describes five types in different hardness ranges, lists applications for which each type is best suited, and gives instructions for pouring Glyco metal bearings. (14)

A RATING CHART for its line of 17 engines and power units is offered by the *International Harvester Company.* The chart gives brake horsepower on engines without fan or accessories, and on power units with fan and accessories. Ratings are given on all fuels which can be used in the carbureted units. (15)

THE OPERATION OF A MODERN CEMENT PLANT HANDLING STATION is described in a bulletin published by the *Fuller Company.* Illustrations show the bulk cement being unloaded from barges with the Fuller-Kinyon remote control unloader, and the handling of cement from silos by F-H Airslide fluidizing conveyors to bulk cement trucks and packers in the plant. (16)

BULLETIN 1105, released by *The Falk Corporation,* is a comprehensive bulletin on the Falk all-steel concentric shaft and small right angle speed reducers for applications up to 140 hp. Horsepower and torque ratings are given, as well as dimensions, overhung load and thrust capacities, and application photos. (17)

JOHN DEERE INDUSTRIAL TRACTORS and equipment are pictured in a booklet available from the *John Deere Industrial Division.* Specifications are given for each type of equipment and application photos show the equipment on the job. (18)

LE-HI HEAVY-DUTY HIGH-PRESSURE HOSE COUPLINGS are covered in Bulletin No. 115 published by the *LE-HI Division, Hose Accessories Company.* Bulletin 115 covers applications of high pressure air, steam, gas, hydraulic, liquid, etc., used in mining, construction, etc. (19)

A NEW METHOD FOR SELECTING BELT CONVEYOR IDLERS for bulk material handling is introduced in Bulletin 56-80, recently released by the *Chain Belt Company.* The entire line of Rex-Rated idlers is also described. (20)

MEDIUM-DUTY DUMP BODIES AND ARM-TYPE HOISTS are featured in a 12-page catalog issued by *Gar Wood Industries.* Arm-type and direct-lift hoists, and conversion hoists are illustrated and described. Specifications for hoists with capacities ranging from 6 to 12 tons are outlined. (21)

CURRENT INFORMATION ON DRILLING, blasting, and excavating methods used by the quarrying, mining, and construction industries are outlined in a new brochure published by the *American Cyanamid Company.* The bulletin presents 48 case studies which include information on geological formation, excavating practices, drilling equipment, bit performance, drill patterns, blasting data, and explosives ratios. (22)

SPROCKETS WITH SHEAR PIN PROTECTION manufactured by the *Link-Belt Company,* are available from stock in a new "off-the-shelf" roller chain shear pin sprocket program. Folder 2749 contains detailed information and tables listing stock sizes, torque ratings, hub dimensions, and keyseats. Examples for selection and "problem and solution" instructions are detailed. (23)

CENTERFIT WIRE ROPE recommendations for applications on various kinds of earthmoving equipment are included in a folder prepared by the *Jones & Laughlin Steel Corporation.* A comparison table of the breaking strengths of various types of wire rope is also included. (24)

PORTABLE AGGREGATE PLANTS manufactured by the *Iowa Manufacturing Company* are diagramed in a new bulletin which shows the various combinations in which they may be set up to produce crushed and screened aggregate. Different types of primary units, intermediate scalping units, secondary units, and screening and bin units are included. (25)

APRIL, 1957

Please send more information on circled items described in this issue.

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61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77			

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L. Miner Doolen, left, Telford Equipment Co., Lansing, Mich., is congratulated upon his election to the presidency of A.E.D. by S. F. Laskey, Northwestern Equipment Co., Fargo, N.D., retiring president.

38th Annual A.E.D. Meeting Pulls Record Registration

equipment financing keynote of discussions

THE 38th annual meeting of the Associated Equipment Distributors, held January 27 to 30 at the Conrad Hilton hotel in Chicago, drew some 4,500 industry executives and their wives—the largest attendance in the history of the association.

This group represented 742 distributor and 340 manufacturer firms from the United States, U.S. territories, and Canada. Due to the concurrent scheduling of the A.E.D. convention and A.R.B.A.'s meeting, the equipment group was provided with the opportunity of visiting the road exposition, as well as the A.E.D. display of equipment and accessories in the Conrad Hilton hotel.

The topic given major consideration was that of construction equipment financing in the light of the new expanded highway program. Also, during the business sessions of the four-day meeting, the members elected new officers for 1957, studied distributor - contractor relationships,

(*Continued on page* 160)

A.E.D.'s executive officers for 1957. Seated, left to right: vice-president, F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass.; president, L. Miner Doolen, Telford Equipment Co., Lansing, Mich.; executive vice-president, H. D. Anderson, Rish Equipment Co., Bluefield, W. Va.; and vice-president, Jewel A. Benson, Benson Tractor Co., Houston, Tex. Standing, left to right: treasurer, John R. Borchert, Borchert-Ingersol, Inc., St. Paul, Minn.; executive secretary, Bud Hermann, A.E.D.; and Canadian vice-president, H. T. MacDonald, Kane Equipment, Ltd., Winnepeg, Man.

Two NEW All-Weather rotary

No "dry-starts" even on coldest mornings

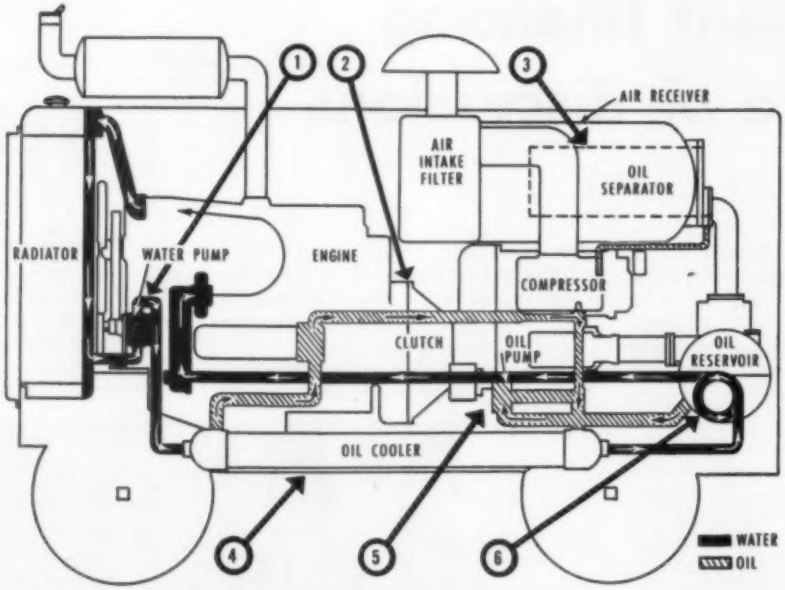
No overheating, even in desert-hot weather

Flow chart shows how Gardner-Denver water-oil cooling system operates

1 Water circulating system automatically provides constant operating temperature for both compressor and engine under all weather conditions—hot or cold.

2 Clutch eliminates cold-weather "dry-starts."

3 Effective oil separator minimizes oil consumption.



4 Circulating water cools compressor oil.

5 Oil pump provides positive flow of compressor oil.

6 Warm water from engine warms up compressor oil before clutch is engaged.

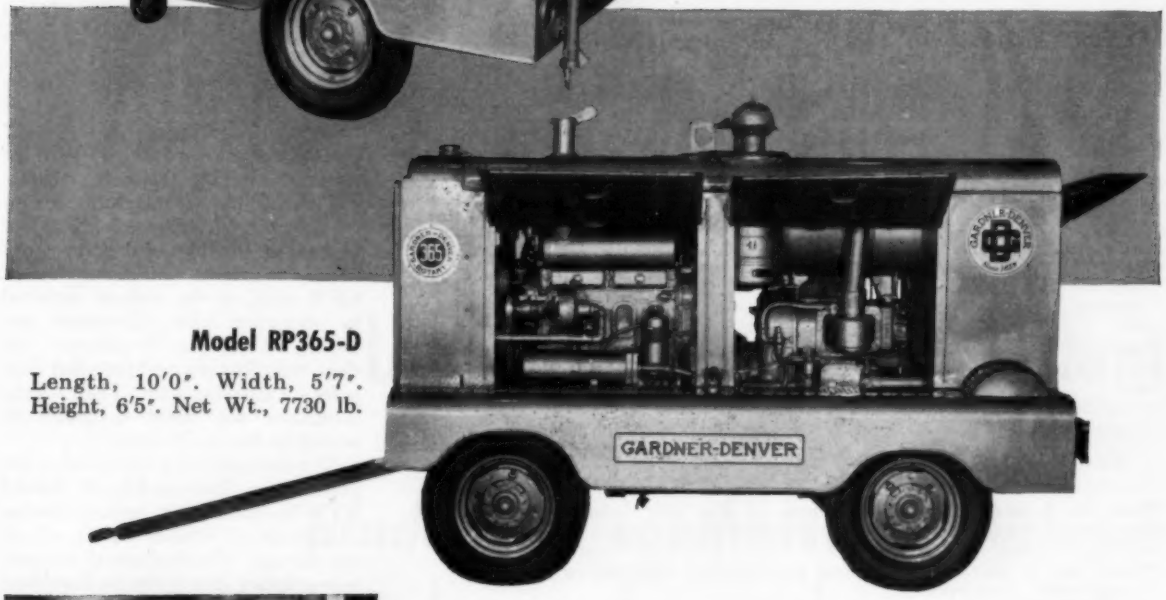
There's a Gardner-Denver Distributor in your area —see him for details

compressors by Gardner-Denver

feature the Gardner-Denver Water-Oil Cooling System

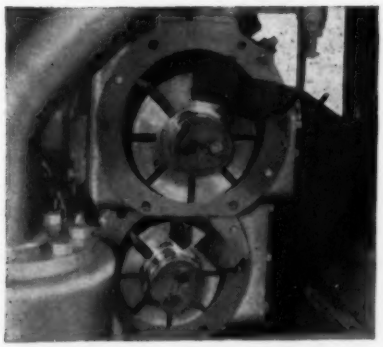
Model RP125

Length, 10′6″. Width, 4′8″. Height, 5′0″. Net Wt., 3540 lb. Available with gasoline or diesel engine.



Model RP365-D

Length, 10′0″. Width, 5′7″. Height, 6′5″. Net Wt., 7730 lb.



Plus these field-proved features of the Gardner-Denver RP600 and RP900 portables

Inspection of working parts can be made in minutes. Removing screws from easily accessible end plate exposes blades for service. No piping or tanks block the way.

- *Thriftmeter Control*
- *Vibrationless Operation*

Write for complete details.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Ave., Toronto 16, Ontario

Mineral Output

(*From page* 138)

cording to the Bureau of Mines. All minerals except clays, sand and gravel, and stone registered increases over 1955 levels.

As in previous years, over 90 percent of the minerals produced in Iowa were utilized in the building and road construction industries.

Nonmetallic minerals (cement, stone, sand and gravel, crude gypsum, clay, and lime) and mineral fuels (bituminous coal and peat) were produced in Iowa in 1955.

The Iowa mineral production report was prepared co-operatively by the Bureau of Mines and the Iowa Geological Survey.

Minnesota The total value of mineral production in Minnesota in 1956 was approximately $453,000,000, a decrease of about 10 percent below that recorded in 1955, according to the Bureau of Mines. The chief reason for the decrease was the drop in shipments of iron ore brought about by the five-week long labor strike in the steel industry and a subsequent strike of licensed officers on a large part of the Great Lakes ore-carrier fleet. Loss in output was reduced considerably by increased production during the operating period and extension of the lake-shipping season to December 19. Shipment of iron-bearing ores (including those ores containing 5 to 35 percent manganese, natural) accounted for about 93 percent of the total value of mineral output of the state in 1956.

Preliminary data for 1956 indicate slight decreases in total values of production for lime and sand and gravel. Increases in total values of production were recorded for cement, marl, and stone. Production and total values of other minerals, (grinding pebbles, tube-mill liners, clays, gem stones, and peat) in 1956 were approximately the same as in 1955. The Universal Atlas Cement Company at Duluth was the sole producer of cement in the state. Quicklime and hydrated lime were manufactured at Minnesota's only lime plant in Duluth. Stone products included granite, limestone, and quartzite.

Data for the Minnesota mineral production report were prepared by the Division of Mineral Industries, Region V.

Mineral Production in Iowa, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Cement:				
portland .....376-lb. bbl	9,914,977	$27,837,413	11,000,000	$32,560,000
masonry .....376-lb. bbl.	514,966	1,701,574	465,000	1,750,000
Coal[3]	1,258,357	4,401,857	1,450,000	[4]
Gypsum (crude)	1,337,160	4,176,710	1,365,000	4,260,000
Sand and gravel	11,770,836	8,344,832	10,600,000	7,500,000
Stone	15,705,412	18,555,176	14,600,000	17,750,000
Undistributed: Coal (1956), Clays, Lime (open market) and Peat		1,252,282		6,485,000
Total Iowa[5]		63,555,045		67,300,000

[1]Production as measured by mine shipments or mine sales (including consumption by producers), except that fuels and gypsum are strictly production.
[2]Subject to revision.
[3]Relates only to mines with an annual production of 1,000 tons or more.
[4]Included with "Undistributed."
[5]The total has been adjusted to eliminate duplication in the value of clays and limestone used in the manufacture of cement and lime.

Mineral Production in Minnesota, 1955-56[1]

Mineral	1955[2] Short Tons (unless otherwise stated)	1955[2] Value	1956 (Estimated) Short Tons (unless otherwise stated)	1956 (Estimated) Value
Iron ore (usable) long tons	69,419,334	$436,369,410	60,412,266	$416,850,266
Manganiferous ore (5 to 35% Mn)	864,627	[3]	602,793	[3]
Sand and gravel	25,896,426	17,429,334	26,400,000	16,900,000
Stone (except quartzite 1955-56)	3,004,521	7,042,840	3,500,000	8,200,000
Undistributed: Abrasive stones (grinding pebbles, tube-mill liners), cement, clays, gem stones, lime, manganiferous ore, marl, peat, and quartzite..		11,562,558		11,601,000
Total Minnesota[4]		501,174,000		453,384,000

[1]Production as measured by mine shipments, sales or marketable production (including consumption by producers).
[2]Subject to revision.
[3]Included with "Undistributed."
[4]Total value has been adjusted to eliminate duplication of value of limestone used in the manufacture of cement and lime.

Eastern Rock Products

(*From page* 137)

plied to the burners on the dryer. A large capacity fan maintains uniform draft and efficiency in the dryer. The storage tank containing the hot oil for the heater and the Hopkins burners holds 5,000 gal.

The two 10,000-gal. asphalt storage tanks are insulated with 2 in. of fiberglass and a ⅜-in. thick plastic coat of asbestos wrapped with tar paper and having all joints sealed.

Three 100-kv.-a. transformers convert electric current coming into the plant from the lines of the New York State Electric & Gas Company at 4,800 volts, to the voltage required by operating units. Company personnel set all the foundations for these transformers and installed four poles for carrying wire. Then a local contractor was hired to install all wiring to the equipment.

The dust-arresting unit used at the plant is a Johnson-March Model ATW hydraulic dust arrester having a capacity of 40,000 cu. ft. of air per minute. The horizontal cyclone-type primary dust collector furnished by Hetherington & Berner originally had a tipping valve which returned fines by gravity to the hot elevator and on to screening and storage. The company reversed this tipping valve and welded on a chute, so that the fines excess could also be removed to a truck. Water for the operation of the dust collector comes from Oriskany Creek, which flows below the property. Waste water from the collector is fed through 6-in. diameter pipelines to a settling basin. Clear water leaches back into the creek.

A fugitive dust collection system on the hot elevator, screen, weigh-box, and mixer has its own exhauster entirely separate from the dryer collection system. A duct system and individual dampers at each point assure a balanced operation.

Asphalt is delivered to the plant

(*Continued on page* 150)

The Leffler Sand and Gravel Company's plant, with the belt conveyor from the pit at the right. Note the simple straight-line operation.

Leffler's Aggregate Plant

producer in southeastern Michigan uses scrubber, log washer, and screw washer

By WALTER E. TRAUFFER

Another ON THE SPOT Report

THERE has been considerable activity in recent years in the sand and gravel industry in southeastern Michigan, and a number of new plants, mostly of small or medium size, are in operation. One of the newest is that of the Leffler Sand & Gravel Company, on Tindell Road, near Holly, Mich. This 100- to 150-cu. yd. per hr. plant went into operation in 1955 and was built primarily to produce concrete sand and gravel for ready-mixed concrete, concrete block, and concrete pipe producers in Flint and the surrounding area. This is a simple and efficient straight-line plant with unusually complete washing and scrubbing facilities.

This company, owned by A. S. Leffler of Davison, Mich., has been in the sand and gravel business in this area since 1938. Mr. Leffler is also a road contractor, on state and county roads, and still operates several portable plants to supply the road gravel for his construction jobs. He keeps in touch with his various operations through a Motorola short-wave radio station at his Davison office and has sets at his plants in pickup trucks, heavy equipment trucks, and in several cars, including that of Clayton Smith, superintendent.

The Leffler plant is in a big production area, with several other pits close by. The terrain is hilly, and the deposits vary considerably in depth. This 145-acre deposit is known to have good gravel to a depth of 190 ft. Overburden is very light and is caved in with the sand and gravel in the 70-ft. deep pit. The material averages 40 percent sand and has a small percentage of

The field conveyor system in the pit with the 2-cu. yd. dragline loading to the hopper.

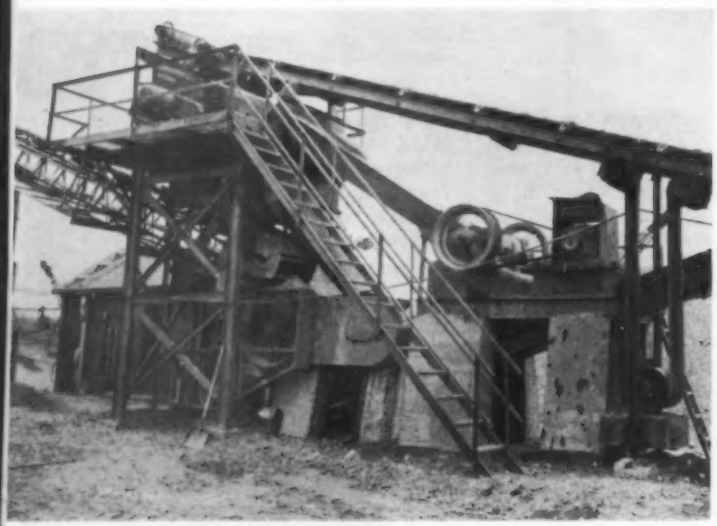
boulders ranging up to 12 in. in size.

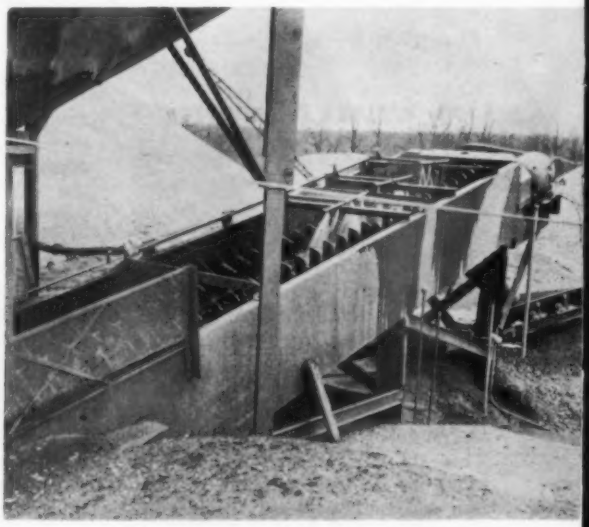
The company uses a field conveyor system in the pit which can be swung radially and extended in 50-ft. sections as digging progresses. The Koehring 605 dragline used has a 60-ft. boom and a 2-cu. yd. Page bucket and is powered by a G.M.C. diesel engine. This loads to a 15-cu. yd. steel hopper under which there is a plate feeder. In spite of the fact that the deposit contains boulders up to 15 in. in size, no grizzly is used over the hopper. Four 50-ft. sections of 24-in. conveyor are now being used in the pit. A 24-in. by 100-ft. inclined conveyor takes the material to the top of the plant. All conveyors are Universal and are driven through Dodge transmissions.

Scalping is done by a 4- by 8-ft. Simplicity 2-deck screen with 1¾- and 1¼-in. cloth. Oversize (plus 1¾-in.) goes to a 10- by 36-in. Uni-

Below, left: The pit conveyor discharges to the scalping screen. The jaw crusher is at the right and the roll crusher below.

Below, right: 30-in. by 10-ft. log washer which gets ⅜- to 1¼-in. gravel from the scrubber.





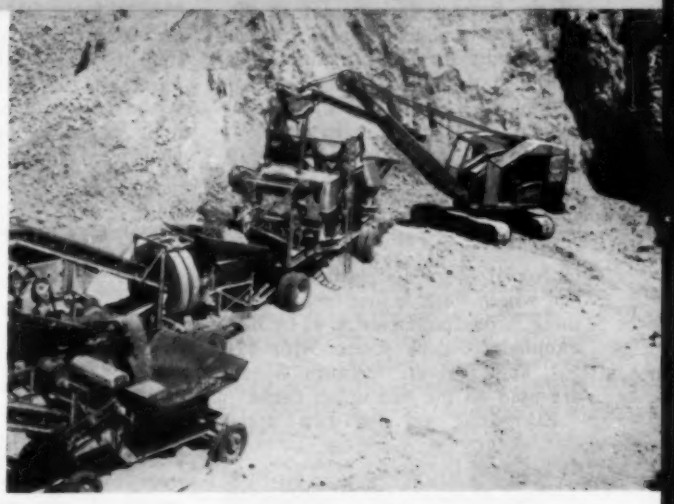
"Past performance sold us on a third Bucyrus-Erie"

says Iowa Quarry Operator*

"We bought our third Bucyrus-Erie in December, 1954, on the basis of past performance of our five-year old 22-B," comments this satisfied owner. His three Bucyrus-Erie 22-B shovels are kept busy working 10 scattered limestone pits, all within a 25-mi. radius of Charlotte in Clinton County, Iowa.

To this, the quarry superintendent adds: "Bucyrus-Eries compare favorably with any machines I've been around. That five-year old 22-B has sure moved a lot of stone and has stood up very well. There's not much work to do on them. We've had nothing repaired on the two machines in this pit, except clutch bands and cables. If they don't wear out, you're not doing anything. We've had only one operator on the new 22-B, and he really takes pride in caring for 'his' machine. That, in itself, helps keep maintenance costs low."

And, what about the operators? "In my 35-year experience on several different makes of machines from steam to diesel power," says one of them, "I've found Bucyrus-Eries unexcelled for easy handling, for power when you need it, and for day after day performance with little downtime. I like the simple controls and easy maintenance and lubrication . . . everything's so handy to get at."



You can enjoy the same "personnel" satisfaction in sustained high output and efficient, economical equipment performance. Your nearby Bucyrus-Erie distributor will gladly help you select a size and capacity to fit your needs — from the ⅜-yd. 10-B to the 4-yd. 88-B. See him soon, or write us direct for information.

218E56C

* Name on request

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

The screening-and-washing tower, with the log washer in the foreground.

Another plant view shows the revolving scrubber (top), the log washer (right), and the screw washer (left). Note the arrangement of the chutes to the bins.

versal jaw crusher which reduces to 1¾ in. minus. The 1¼- to 1¾-in. off the bottom deck goes to a 30- by 24-in. Universal roll crusher which reduces to 1¼-in. minus. The products of both crushers are carried on the same 18-in. by 32-ft. belt conveyor back to the main conveyor.

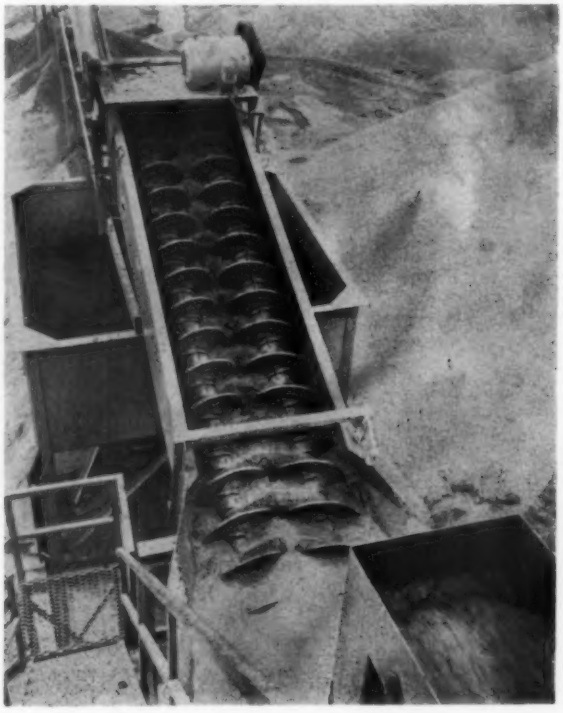
The minus 1¼-in. material through the bottom deck of the screen is carried on a 24-in. by 100-ft. belt conveyor to the top of the screening tower. It goes first to a Universal 48-in. dia. revolving scrubber, where water is first used. Everything is discharged on a 4- by 8-ft. Simplicity 3-deck screen with ¾-, ⅜-, and 3/16-in. openings. Sprays are used on the two upper decks.

Everything off the two upper decks (⅜- to 1¼-in.) goes to a 30-in. by 10-ft. McLanahan & Stone Mudmaster log washer. This is driven through open spur gears and V-belts by a 60-hp. motor. A belt conveyor carries the product to a stockpile. The 3/16- to ⅜-in. material off the bottom deck of the screen goes to a bin for truck loading. An 18-in. by 60-ft. conveyor feeds from this bin to another stockpile. The minus 3/16-in. sand through the bottom deck of the screen goes to a 30-in. by 25-ft. Eagle double-screw washer. The sand is discharged to another loading bin from which a similar belt conveyor can carry it to a third stockpile.

At present the three sizes produced are loaded from stockpiles to trucks by three cranes, a Lorain 50 with a 1-cu. yd. Page bucket, a Northwest 25 with a ¾-cu. yd. Owen

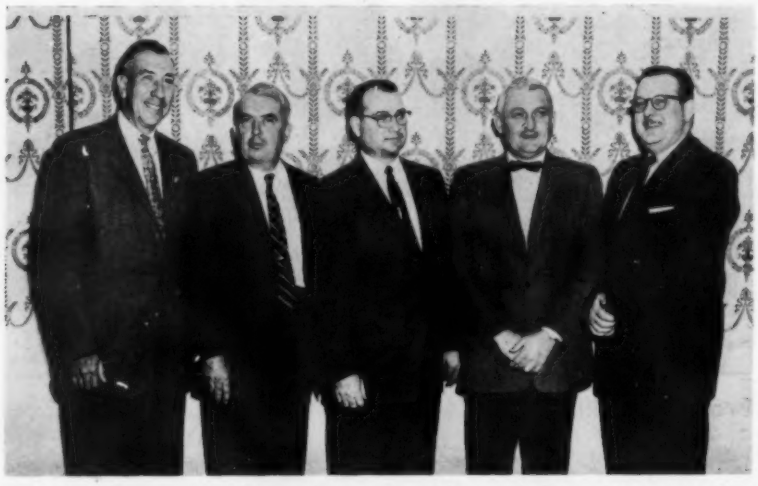
(*Continued on page* 150)

Clayton Smith, superintendent, using the radio phone in one of the company's service trucks.



The 30-in. by 25-ft. double-screw washer which receives minus 3/16-in. sand from the screen.

Expanded Clay, Shale Meeting Highlights Industry Optimism



Included in this group of E.C.S.A. members are the newly elected officers. left to right: Glenn Barnes, Phoenix, Ariz., who was the group's first president; D. M. Groves, Knoxville, Tenn., secretary-treasurer; R. A. Utiger, Denver, Colo., president-elect; R. G. Hardy, Syracuse, N. Y., vice-president; and W. F. Atkins, Tamaqua, Pa., retiring president.

OPTIMISM with respect to future progress anticipated for the industry was strongly reflected at the annual meeting of the Expanded Clay and Shale Association, Inc., held on February 25 at the Hotel Mayfair in St. Louis. Sessions were highlighted with predictions that expanded clay and shale lightweight aggregates can look forward to many expanding market horizons.

Officers elected during the meeting for the 1957 year include the following: R. A. Utiger, Cinder Concrete Products, Inc., Denver, Colo., who was chosen as president, to succeed W. A. Atkins, Tamaqua, Pa.; R. G. Hardy, Onandaga Brick Corp., Warners, N. Y., vice-president; and D. M. Groves, Shalite Corporation, Knoxville, Tenn., who succeeds Mr. Hardy as secretary-treasurer.

In stepping down from the presidency after two years in that office, Mr. Atkins noted that the opportunities for future progress seem almost limitless. Projected construction requirements are expected to presage a period of tremendous development in the acceptance of expanded clay and shale lightweight aggregates as a modern building material.

Mr. Atkins paid tribute to the foresight and persistence of early E.C.S.A. members and stated that remarkable progress has been made.

However, he added, this is no time for complacency — there is much more to learn about the most efficient ways to make, market, and promote the product. The perfecting of new techniques of building such as lift-slab, tilt-up, prestress, and precast were noted as examples of the expanding horizons for the industry.

At a luncheon meeting association members heard Robert D. Thomson, acting chief of the Division of Mineral Industries, U. S. Department of the Interior, Region 5, Pittsburgh, describe the Bureau of Mines' most recent investigations into the potential of lightweight aggregate. Mr. Thomson presented the results of a survey in the New England states, as well as other areas of the nation.

In another paper, prepared by C. H. Carmichael, I. L. Stiles and Son Brick Co., North Haven, Conn., and read by B. K. Powers of Virginia Light Weight Corp. of Charlottesville, Va., Mr. Carmichael discussed the manufacturing process involved in the production of his firm's lightweight aggregate, with particular reference to the manner in which it solved the problem of industrial waste disposal.

T. R. Berger, executive secretary, in his annual report to the membership noted that since the annual meeting in New Orleans one year ago, E.C.S.A. has implemented its place as an association of influential leadership in the industry. Mid-year sessions in Syracuse (June, 1956) were attended by more members and a broader cross-section of the industry than ever before.

In terms of seeking out ways to make aggregates of the finest quality and by co-operative action to bring these products to the attention of architects, engineers, contractors, and all others who share a common interest in better building techniques, the past 12 months show a favorable record, it was noted.

Directors of the association, in executive session, voted to support an enlarged program of technical research. Lucas E. Pfeiffenberger, a ceramic engineer who resides in Alton, Ill., who has been doing graduate studies of lightweight aggregates at the University of Illinois, was named technical co-ordinator for the association. President Utiger appointed the following to form a technical problems committee: Melvin Cruzen, Livonia, Mich. (chairman); H. O. Pommer, Memphis, Tenn.; and Mr. Hardy.

A. C. CONNOLLY JR. has been named director of special sales for the Texas Portland Cement Co.

Mr. Connally began his career in the cement industry at Houston in 1927 as sales representative for Lone Star Portland Cement Company.

BRAD MCCLAIN, regional sales representative for the Ideal Cement Company, Houston, Tex., has been appointed sales manager of the Texas Portland Cement Company at Orange.

F. L. Crosby

FRANK L. CROSBY, Oakland, Calif., has been named manager of public relations for Permanente Cement Company and subsidiaries. He has been public relations director for the Kaiser Gypsum Company for the last year and a half. Prior to this time, he handled the company's public relations in the Pacific Northwest.

Mr. Crosby had had ten years of experience in the building materials management and public relations field before joining the Kaiser organization in 1954.

Eastern Rock Products

(*From page* 144)

by means of transport tank trucks. If necessary, asphalt can be pumped from railroad tank cars on the lines of the Ontario & Western Railroad.

The rated output of 150 t.p.h. has been reached without difficulty. Only three men are required to operate the plant. Most of the output goes to state road contractors within a radius of about 45 to 50 miles. The market for bituminous concrete pavements was limited last year, but is expected to pick up with the construction and/or rebuilding of secondary roads in the area this year. Other companies producing the same products are located in Utica, and at points 35 miles east and 18 miles west of Oriskany Falls.

Officers of the parent corporation include the following: Harold V. Owens, president and general manager; C. A. Munz, vice-president and sales manager; J. V. Owens, vice-president and production manager; and H. H. Kirwin, treasurer. Bernie Elmer is superintendent of the asphalt plant.

Leffler's Aggregates

(*From page* 148)

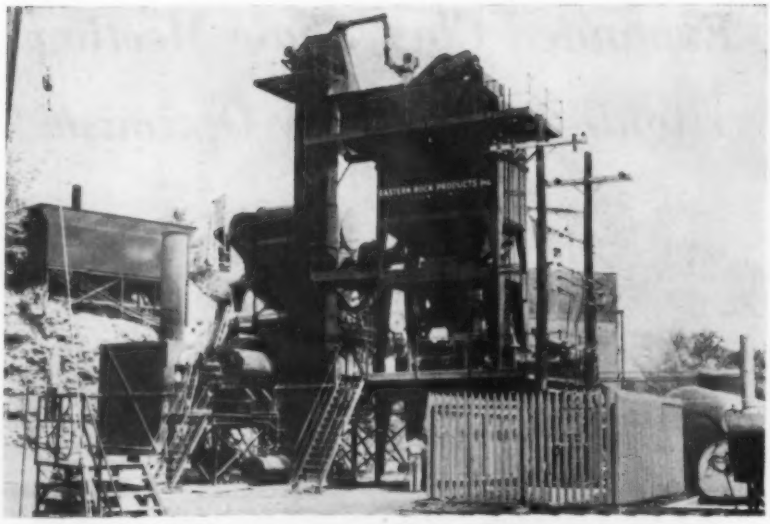
bucket, and a Koehring 304 with a 1-cu. yd. Johnson bucket. Deliveries are made in customers' trucks, which are weighed on a Thurman scale with a 50-ft. platform.

It is planned to replace the present stockpiling system with a row of four 40-cu. yd. bins. These would be fed by individual 100-ft. belt conveyors. Sand and the three sizes of gravel would be loaded out from these bins—either singly or in any desired blend—by a loading conveyor under them. This conveyor will be reversible, for stockpiling.

The wash water for the plant is obtained from a 193-ft. well with a 12-in. Deming pump. Another well with an 8-in. Deming pump is kept in reserve. The waste water from the log washer goes to a worked-out section of the pit behind a level from which much of it seeps away. The overflow goes to another pond, which in turn overflows clear water.

The entire plant is controlled from a building suitably located. An automatic-sequence starting-and-stopping system is used, with push-buttons at the central location and local switches at the equipment.

Consumers Company of Chicago recently acquired the Milwaukee Limestone Products Company and the Buckley Gravel Company, both in Franklin County, Wis.



The 4-deck enclosed 250 t.p.h. horizontal screen grades the hot stone.

Bradford Hills

(*From page* 131

Washing it in such a manner that the cost of reclaiming the stockpile would not skyrocket was the next problem. It was decided to run preliminary washing tests, using the same pool washing screen employed in normal operations.

Three 18-ton truckloads of screen feed were brought to a loader-fed conveyor on which wide skirt boards were temporarily installed. Two men with shovels were present to feed the conveyor at a fairly uniform feed rate of approximately 75 to 100 t.p.h.

The results were gratifying in that the screen cleaned a large part of the "unusable" material effectively and efficiently. The test also disclosed that the 32 percent that passed through the slotted bottom deck opening could be reclaimed in the sand drag.

These satisfactory test results were used as a basis for deciding to build a permanent washing-reclaiming plant. To do this an 18-ton truck hopper, a 24-in. conveyor belt, and a vibrating feeder were installed to work in conjunction with the 6- by 14-ft. double-deck pool washing screen.

This new flow system is arranged so that it can be conveniently switched from the 80-ton stockpile to the normal quarry operations. (See flowsheet.) To accomplish this, the normal screen feed over the 30-in. conveyor is replaced with the feed flow from the 24-in. conveyor which carries stone from the reclaiming hopper and its vibrating feeder.

All material passing over the ½-in. deck of the pool washing screen is returned to a 16- to 24-in. roll crusher and reduced to minus ½-in. Stone passing through a ½-in. opening is retained on a 3/16-in. auxiliary deck cloth and then either stockpiled or loaded directly into trucks for commercial use. Material passing the 3/16-in. deck and fines held on the 0.080- by 3-in. slotted screen is used for grits. All material passing the slotted deck is pumped to a 48-in. sand drag for dewatering and reclaiming as ID-2 filler for bituminous concrete. The small amount of slurry from the sand drag is sent to a sump.

Each 100 tons of material taken from our 80,000-ton stockpile is yielding the following:

68 tons of Pa. 1-B
11 tons of grits
11 tons of ID-2 filler
10 tons of unusable matter

The three usable types of material have the following sieve analyses:

Pennsylvania 1B (blended)

Percentage Passing	Opening
100	½ in.
75-100	⅜ in.
10-30	4 mesh
0-10	8 mesh

Grits

Percentage Passing	Opening (Mesh)
100	4
54.8	8
18.5	12

ID-2 Filler

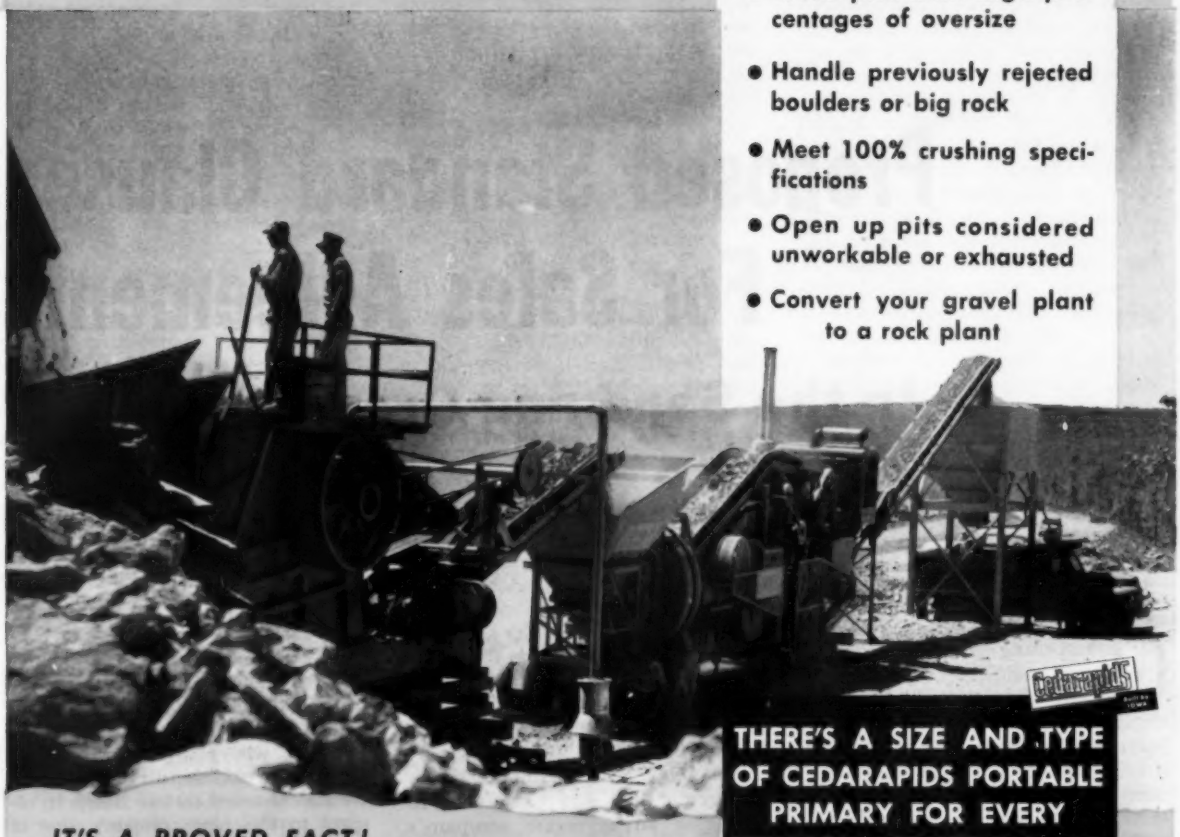
Percentage Passing	Opening (Mesh)
100	4
98.5	8
70	16
43	30
14.9	50
4.2	100
1.0	200

Thus, the stockpile of 80,000 tons is being transformed into approximately 70,000 tons of marketable stone at a nice profit. If the material had been disposable, it was originally worth 25 cents per ton.

Double your secondary crushing capacity with a CEDARAPIDS PORTABLE PRIMARY

...and get all these other advantages!

- Work pits with high percentages of oversize
- Handle previously rejected boulders or big rock
- Meet 100% crushing specifications
- Open up pits considered unworkable or exhausted
- Convert your gravel plant to a rock plant



IT'S A PROVED FACT!

With a Cedarapids Portable Primary *of the size and type to fit your conditions* to handle the heavy crushing load ahead of your secondary equipment, you can double your plant capacity!

It adds a third stage of reduction to your operation, permitting your secondary crushers to handle twice as much material. It reduces the circulating load. More material will be taken off by the screen in your secondary plant before it reaches the crusher.

Equipped with a vibrating grizzly or scalping screen, your Portable Primary by-passes fines, sand, chips or dirt to prevent choking of the crushers.

You can turn *all* pit-run material, even big boulders, into specification 100% crushed aggregate. You'll have the capacity and flexibility to handle a wider variety of jobs . . . open up deposits considered unworkable because of excessive oversize or fines, re-open pits thought to be exhausted, operate in pits or quarries closer to the job to save hauling costs.

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

THERE'S A SIZE AND TYPE OF CEDARAPIDS PORTABLE PRIMARY FOR EVERY PRIMARY REDUCTION JOB

Single Jaw Crusher

15" x 24" 25" x 40"
22" x 36" 30" x 40"

Twin Jaw Crusher

18" x 36"

with low-cost Vibrating Grizzly

Increases output of primary crusher up to 25% by by-passing fines before they reach the crusher. Three sizes available with single or double deck.

with Scalping Screen

48" x 6' horizontal vibrating screen between feeder and crusher increases production in pits with low percent of crushing, or where specifications require 100% crushed particles.

Portable Double Impeller Impact Breakers

30" x 42" 36" x 45"

With a reduction ratio of 20 or 30 to 1, this unit assures high capacity of desirable cubical shaped aggregate, which needs little or no further reduction.

Proposed Standard Clauses For Sales Agreements

In the Sand and Gravel Industry*

By CHARLES E. BRADY
President, Material Sales Company
Salisbury, N. C.

IT is surprising how many gravel and sand companies, and not always the smaller ones, have no standard quotation form or sales contract form. Perhaps, were they to think about their lack of such business forms, they might decide that their companies were doing very well without them.

Perhaps, like Topsy, they just grew, and business details and forms were impedimenta which were to be handled in due time. Just recently we bought an interest in an aggregate company whose beginnings evolved one night between two contractors, on the eve of a highway letting. There were several jobs in this letting which would use considerable tonnages of aggregates for base material. These two contractors decided to bid this work, with the idea of furnishing the base material from a site to be opened near the projects in question. As luck would have it, they were successful bidders, and they did proceed to open an aggregate plant. The site chosen for the plant was near a large urban center. After production was under way, the two contractors decided to incorporate the aggregate plant, each of them owning a portion, and enlarge the facilities in order to supply the indicated demand of the nearby urban area. Since neither of these contractors had any experience in managing an aggregate company's sales and general business, and since their enlargement plans called for a considerable investment, they decided to sell some of their stock.

Charles E. Brady

That's where we fitted into the picture. In addition to buying stock, we also assumed certain duties in respect to this new company, one of which was the total responsibility for sales. There were no written orders between the aggregate plant and its contractor customer—just a verbal understanding, arrived at on the night prior to the letting. Did the price of the base material include sales tax? Did the haul price include transportation tax? For what maximum rate of tonnage per day would the producer be responsible? How much shipping notice would the producer receive? If any question arose as to material being out of the specifications, what procedure would be followed by the customer? By the producer? What were the terms of payment to be followed by the contractor?

Each and every one of these questions, plus several more, had to be resolved, and are still being resolved. No easy task when all understandings were not only verbal, but also at the time of conception, not even thought through to any definite con-

*Presented before a convention session of the National Sand and Gravel Association at the Statler Hotel, Los Angeles, Calif., February 12, 1957.

clusion. If I needed to be sold on the necessity of standard sales agreement clauses for our industry, the experience of trying to unravel the Gordian Knot created by these unresolved questions has more than sold me.

Purpose of Sales Agreement The sales agreement form has for its overall purpose the goal of making a contract between buyer and seller, and making this contract in such a manner as to avoid any misunderstanding, and hence controversy. I suspect that many of us, when looking over the fine print and the numerous paragraphs in the average quotation and sales agreement form, have wondered at the necessity of so much ado about something so simple as selling a gravel order. If you have entertained such thoughts, you, the seller, have never been in a controversy with a buyer! For once you have waded through such a controversy, and experienced the unpleasant and often expensive results, you would be the first to understand the need for these paragraphs, which state so clearly the position and responsibilities of both buyer and seller under certain conditions which, experience has shown, happen often enough to make them a problem.

Standard Features Industry usage has almost unanimously established a quotation form which covers the face side of a sheet, with a provision at the bottom for the buyer to accept for his company by signing and dating, and which provides as well, a place for the seller to execute, whereupon the quotation becomes a contract binding upon both parties. On the reverse side of this sheet usually are printed several clauses known as "general terms and conditions of sale." These clauses become a part of the contract when the same is fully executed by both buyer and seller.

The name of your company, its address, and telephone number should always head your quotation form. Care should be taken that this be done so clearly that any stranger using your quotation would have no difficulty in contacting your firm either by mail or telephone. You say this is elementary? True, it is, yet I have seen prospective buyers, strangers to the seller's area, puzzling over quotation forms carrying no more than the company name—no address or telephone number.

A space on the form should be given to identifying the project for which you propose to supply material. Then the material should be described in a manner that correlates it to the specifications, quantities required, and plans of the project. For instance, if your company has adopted certain nomenclature to describe its material and sizes, care must be exercised to make them understandable to an estimator, who might not be familiar with your system of nomenclature. For example, you might say, "We quote our #1 and #2 Gravel for Class A Concrete @." However, most companies seem to prefer top screen size nomenclature, which is simpler and more readily understood, for example: "We quote our 1½-in., 1-in., and ¾-in. concrete gravel for Class A concrete @."

Experience has taught that it is best for the seller to quote his material f.o.b. the plant, whether for truck or rail delivery (I assume this would also apply for barge delivery), and the per ton price method is less controversial than the per yard method.

Immediately after stating the per ton price of the material f.o.b. the plant, insert a sales tax clause if sales tax is applicable to the project. Don't overlook or beg this question —the woods are full of disputes spawned by ignoring this little 1, 2, or 3 percent question, and 1, 2 or 3 percent of an order can represent a sizable sum.

Shipping, Freight, Weights Sometimes the material will be delivered by rail, sometimes by truck, and sometimes it could be economically delivered by either. The seller should make every effort to be familiar with the project, and furnish all information concerning transportation which a prospective buyer might need. Therefore, if rail and truck delivery are both feasible, both should be quoted. Most forms read: "The rail rate (or truck rate) from our plant to destination is *blank* amount per ton *plus* 3 percent transportation tax." If you wish to avoid having the buyer assume the transportation tax to be included in the rate figure, by all means add "plus 3 percent transportation tax."

Immediately following this sentence, and usually a part of the same paragraph, most companies when quoting rail rates—preferring to assume no responsibility for their accuracy—state that the rate or rates are furnished by the railroad company. Many different clauses are used to cover this by companies across the country. Some go into much detail about freight increases, rate accuracy, etc., but the one we like is short and to the point: "This rate is quoted us by the railroad company, and we do not guarantee its accuracy — consignee is responsible for all freight charges at actual rates in effect at time of shipment."

How often has your company, after beginning shipment of an order, been requested by the buyer to prepay the freight, or to carry the trucking charges as an open account? If you do not object to prepaying freight or trucking, then you don't need the following: "If material is delivered by rail, all freight bills are to be paid by consignee; if by truck, consignee shall pay all transportation charges upon presentation of trucking tickets on the day following delivery." Unless your company is well-heeled indeed, the foregoing limitation is most desirable!

At this point, the question of what weights will govern should be stipulated regardless of whether the material is delivered by rail or truck. The following clause is suggested because of its inclusiveness, brevity, and clarity: "If material is shipped by rail, weights taken by railroad company on scale nearest the loading point shall govern all shipments. If by truck, weights taken on consignor's certified truck scales shall govern." We know of at least one instance where the buyer, a ready-mix operator, found his year-end inventory figures did not check out with his sales figures, indicating to him that his gravel and sand deliveries were short by the amount of the discrepancy. This ready-mix operator requested the sand and gravel producer to adjust his year's billing to conform with the records which he, the buyer, had kept. Roadway grading contractors have estimated base rock requirements at so many pounds per yard, only to find at the job's conclusion, that they have over-run their estimated figures. Did I hear someone say they could not believe a contractor under the above given circumstances would ever ask the seller to adjust his tonnage figures?

It is desirable to have a time limitation for acceptance clause in any quotation; we suggest something like this: "This quotation subject to acceptance within 15 days from the date of award of project—void thereafter, unless the seller waives this provision in writing."

According to the size of the project, and the length of time required to complete it, a price guarantee limitation, as well as a rate per day limitation, may be desirable.

Terms of Payment On most quotation forms now comes that old bogey —the terms. Most salesmen are so eager to sell the prospective buyer that they are, to say the least, reluctant to insist on a firm understanding regarding prompt payment by the buyer. How many salesmen, when terms are discussed, have been guilty of saying, "We won't have any trouble about that." The salesman is probably right, if his company has a firm, clearly stated policy regarding payment of accounts; but what headaches his company can have, if nothing more than vague references and implied understandings are substituted for concise declarations of responsibilities. On the quotation side of the sheet the terms should be set forth, in such a manner the buyer need have no room for doubt as to what performance would be expected from him. A standard clause such as this one, with variances for local practice, is suggested: "Terms: On approved credit, terms are net cash on or before the 15th day of each month, for all invoices of the preceding month. No conditions, verbal or otherwise, that are not incorporated on either side of this agreement will be recognized." On the reverse side of the sheet there is usually an additional clause outlining procedure in the event the buyer fails to perform according to his contractual responsibility as to payment.

All that remains to conclude the quotation form is a provision for acceptance by the buyer and approval of the seller as a contract; whereupon, when properly executed by both parties, the quotation becomes a sales contract subject to certain "general terms and conditions of sale," a series of clauses usually printed on the reverse side of the quotation form.

These general terms and conditions have, in most part, been formulated from past experiences which were the results of not having satisfactory pre-agreed upon answers to questions which arose between buyer and seller. There is now no need for you to pioneer in this field! Much experience has been accumulated over the years by member companies. Perhaps you will not want all of these clauses incorporated in your quotation and sales agreement; perhaps you know one or more which should be added!

Special Provisions Not very often but occasionally, a contractor-buyer will have a project cancelled; or it is not awarded to him after he is the low bidder, and after he could have reasonably expected an award. Under such circumstances the buyer needs protection; we suggest: "If the buyer under this agreement is a contractor and job described herein is not awarded to him, this agreement shall be void, and he shall incur no obligation hereunder if he immediately gives to seller written notice thereof."

More times than I like to recall, we have gone to the trouble, time, and expense of selling our material for a project, then have had to resell for the same project because the contractor-buyer sublet to a sub-contractor that portion of the work using our materials. We find that few, if any, prospective buyers object to the following clause: "If the buyer under this agreement elects to sublet the job described herein, he may do so with the understanding that this agreement is still binding on him and that he must purchase materials for the use of the sub-contractor. With seller's prior written permission, this agreement may be transferred to the sub-contractor."

Most of us have established a pattern of observance of certain holidays, and also decided whether we run our plants on Saturdays and Sundays. An understanding may be necessary to assure an even flow of materials to a customer who works around the calendar. The following clause can be useful as a guide: "Shipments will not be made on Saturdays, Sundays, July 4, Thanksgiving, or Christmas. However, should buyer wish to have shipments increased to allow him to work on these days, seller will increase rate upon receipt of adequate notice."

No sales agreement form we have studied fails to contain a clause similar to the following: "Seller will not be responsible for failure to make shipments as a result of strikes, labor troubles, accidents, breakdowns, fires, floods, weather conditions, delays in transportation, inability to secure railway cars, or by reason of any other contingencies beyond our control." Some go into more detail, some less.

It is desirable to eliminate any question as to the seller's status in regard to being or not being a sub-contractor. There are, however, certain conditions prevailing on federal projects, which might tend to void this feature of your contract. Each such project will have to be considered individually. A good standard clause which will serve effectively in most cases is the following: "Seller does not become a sub-contractor within the meaning of any laws, regulations, agreements, or union contracts, but is only a seller of materials. Compliance herewith shall not obligate seller in any way to deviate from its personal policies or terms of any union contracts to which it is, or may become, a party."

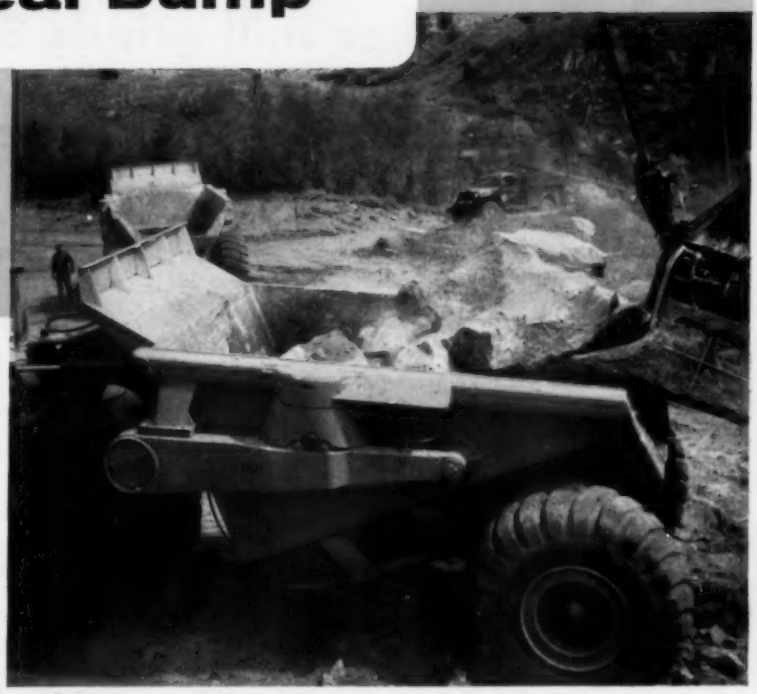
We like the next clause we are going to suggest. There is no room left for doubt in the area which this clause covers. Some people in business apparently ask for more than they expect to receive, for we have been asked more than once to furnish job-mix designs, to arrange for testing and inspecting materials, or to help defray the expense of hiring engineers to test and inspect our materials after arrival on a project. Almost without exception, when we have clearly stated our policy regarding testing and inspecting of our materials, all of our customers have gracefully acceded. We think this wording will state your position: "It is understood and agreed that the seller does not pay for designing, testing, inspecting, or any other such costs in connection with any materials furnished by seller that is done by other than its own engineers. The buyer reserves the right at his own expense to install his representative at the loading plant of the seller, or to employ an outside engineer or technologist to check the materials being loaded for his job."

Seller's Recourse The quotation side of the quotation and sales agreement form stated the "terms" under which you proposed to sell materials. The reverse side should stipulate procedure to which you might have recourse, should the buyer fail to perform according to contract. Admittedly, should the buyer be unavoidably delayed in making a payment according to the terms, explaining his reason for delay to your satisfaction, you will probably not invoke the protection afforded you by this clause, but it is a clause that most producers feel to be highly desirable: "If at any time in the opinion of the seller, financial responsibility of the buyer becomes impaired or unsatisfactory, seller reserves the right to require payment in advance, or other security for delivery under this agreement, and payment for all material shipped under this contract becomes due and payable immediately. Any attorney's fees, costs, and other expenses which may be incurred in the collection of monies due under this contract will be paid for by the buyer."

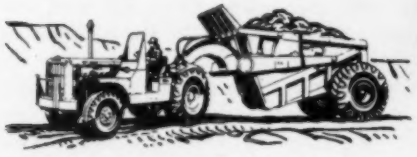
(*Continued on page* 161)

The Right Size and Type Rear Dump

for every tough quarry job!



34-ton capacity PR21 - DW21, for maneuverability in tight quarters.



PR15 - DW15 — fastest, toughest hauler in the 22-ton capacity class.

34-ton capacity PR20 - DW20, for long hauls, high speeds.

New 31-ton Athey Hydraulic Ejection Trailer handles sticky, hard-to-discharge materials.

Name the materials you handle — Rock, earth, overburden — there's an Athey Trailer designed specifically for handling them faster and cheaper than ever before.

Name the tough jobs that beat up haulers — Fast, tough hauls, sloppy footing, big rock, tight quarters — that's the job for an Athey Trailer!

You make your selections from the only *complete* and *proved* trailer line. Select the exact size and features to gear your haul unit to your job. You can depend on them — each Athey Trailer is built to highest standards of quality, design and construction. And Athey Trailers set the pace for lower cost, fast dumping, greater maneuverability, easier loading and higher production.

Ask your Athey-Caterpillar Dealer for all the facts on the complete line of quality-built Athey products today — he will gladly help you select exactly the right Athey-Caterpillar hauling unit for your quarry job. Or write us for literature. ATHEY PRODUCTS CORPORATION, 5631 West 65th Street, Chicago 38, Illinois.

Athey

THE *Complete* TRAILER LINE... *by the Leader*

Lined . . . and relined with Lorain . . .

Primary clinker mill grinds 37,873,000 bbls. of feed efficiently and economically

At Hudson, New York, the Universal Atlas Cement Company has been using USS Lorain Rolled Steel Plate Linings in its grinding mills since 1938. One 10′ - 6″ x 12′ Preliminator alone has ground 37,873,000 barrels of clinker up to February 13, 1956, consuming only two sets of linings and lift bars.

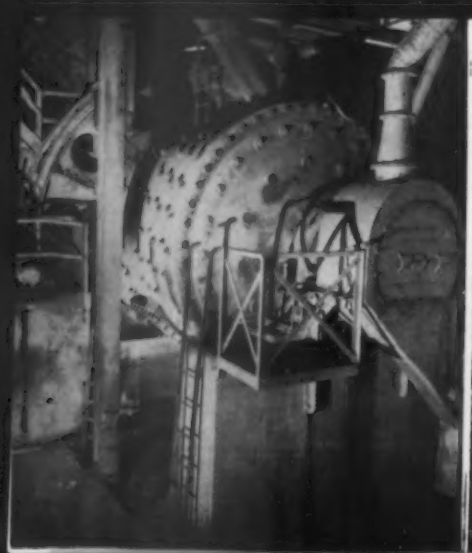
The first lining in this mill was made of 2″ liner plates and lift bars, Section M-3714, designed to permit replacement of bars during life of the lining. In grinding the 38 million barrels of clinker, one lining and one set of renewal bars were completely worn out. But despite the tremendous tonnage processed, the second lining installed was still in serviceable condition when the mill went down for general repairs in February.

HEAVIER-DUTY LINING—The performance of the original Lorain linings was so impressive that management at Universal Atlas decided to install the latest type Lorain lining with deep recessed liner plates and extra-heavy lift bars, Section M-4497, to further increase the mill's grinding efficiency and to eliminate the need for replacing lift bars. The new type lining was installed during the repair period in February so production would not be interrupted during the peak season this summer. Frankly, no shutdown due to lining problems is expected for the next several years.

LONGER LIFE . . . CONSTANT LIFT—USS Lorain Rolled Plate Linings are made of tough, rolled steel that means longer grinding life. Lift bars are rolled alloy steel, heat treated to obtain a hardness differential that will maintain lift height throughout life of the lining, thus providing maximum grinding efficiency. Each Lorain Lining is tailor-made to fit a particular mill. The linings fit snugly—shell wash is eliminated. Mr. A. E. Glasspool, Maintenance Supervisor at Hudson, said "Lorain Linings are designed right and they fit tight. Each piece was properly marked, so we had no trouble with installation."

These heavy-duty linings installed by Universal Atlas will provide effective grinding action without fear of broken bolts, cracked plates or bars, and will continue to perform efficiently until the plates wear paper-thin.

WE'RE GLAD TO HELP—If you are not aware of the merits of USS Lorain Rolled Plate Linings and are not using them—if you are experiencing lining difficulties of any nature, we will be glad to have a sales representative call on you. Just write to: United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.



This 10′-6″ x 12′ Preliminator mill in Universal Atlas Cement's Hudson, New York, plant has ground 37,873,000 bbls. of clinker at a rate of 360 bbls. per hour.

The specially designed bolts will hold the Lorain Lining snug and tight for the life of the lining without fear of breaking. Lorain Linings are made of tough, rolled steel that is tailor-made to accurate shapes.

Although there was still some life left in the old lining, management decided to install the heaviest-duty Lorain Rolled Plate Lining for even greater grinding efficiency, and to assure continuous operation for several years to come.

These new, heavy-duty lift bars, Section M-4497, and 2-inch-thick liner plates are expected to increase mill efficiency. This lining will retain lift for millions of tons. USS Lorain Rolled Plate Lining successfully grinds until plates are worn paper-thin. USS Lorain-designed special manholes and covers were also an unusual feature of this installation.

UNITED STATES STEEL CORPORATION, PITTSBURGH • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS LORAIN ROLLED PLATE LININGS *and* USS GRINDING BALLS

UNITED STATES STEEL USS

12th Annual Meeting Of Iowa Aglime Operators

CONTINUING the record of previous years, the 12th annual convention of the Iowa Agricultural Limestone Association set another new attendance peak. Held at the Hotel Savery in Des Moines, Iowa, on February 20 and 21, the 1957 meeting drew a total registration of 373 members and guests.

Among the distinguished speakers and guests in attendance were Governor Herschel C. Loveless, top officials of the state ASC and SCS committees, representatives of state government departments, and members of the faculty of Iowa State College.

A full business program was rounded out by the Limelights of 1957, the annual reception and entertainment held on the evening preceding the general session; a general luncheon; and the annual buffet dinner and ball, sponsored by the organization's associate members, which is the closing function of the yearly gathering.

The general business meeting, presided over by President Roy A. Pitthoff (Kaser Construction Co., Des Moines), was opened with the showing of a motion picture entitled *Iowa's Expanding Economy.* This film, produced and shown through the courtesy of the Des Moines *Register and Tribune,* portrayed the expanding horizons and opportunities available to agriculture and industry in the state of Iowa.

Following the film, the annual report on activities of the association was made by Clint A. Allen, executive secretary. Mr. Allen pointed out that the billboard advertising program for 1957 has been successfully established. Promotional advertising for the sale and use of aglime will be carried on about 36 billboards in Iowa, and 5 will be used in three neighboring states.

Acting on the recommendation of the nominating committee to fill vacancies caused by expired terms on the 12-man board of directors, the members elected Glenn Moore, Midwest Limestone Co., Gilmore; Tom L. Robinson, Missouri Valley Limestone Co., Inc., Oakland; Dennis Schildberg, Schildberg Construction Co., Greenfield; and Forrest A. Thomas, L. W. Construction Co., Centerville, to these posts.

Dewey Cornell, program specialist of the state ASC committee, and Dr. E. R. Duncan, extension agronomist of Iowa State College, addressed the morning session of the business meeting. The acreage reserve and conservation reserve components of the Soil Bank program were described by Mr. Cornell. He noted that agricultural limestone should play an important role in a successful prosecution of those two plans.

A survey being conducted by the agronomy department of Iowa State College was reported by Dr. Duncan. The survey is being made to determine the current needs of Iowa soils with respect to lime. Projection of partial figures now at hand indicates the need for nearly 50,000,000 tons of aglime to bring this constituent up to desired levels, and 4,000,000 tons per year, from that point on, to maintain those levels.

At the luncheon, Governor Loveless made a brief speech of welcome and commendation for the association's efforts. The featured speaker was Ernie Mehl, feature sports writer of the Kansas City *Star.* During this function, Theodore W. Smith, senior in agronomy at Iowa State College, who is the 1957 recipient of the I.A.L.A.-sponsored scholarship award, was introduced to the members by R. M. Kottman, associate dean of teaching at the school.

During the afternoon business session, over which vice-president Walter A. Schemmer (Schemmer Construction Co., Logan) presided, the speakers were Professor Tom Hippaka, industrial relations department, Iowa State College, and Vern Schield, Schield Soft Limestone Quarry and Schield Bantam Co., Waverly.

Relevantly, Professor Hippaka, who came to this country as a 12-year-old immigrant, worked his way through school to attain several university degrees, and established a fine war record for his adopted country, spoke on the appropriate theme, *What It Means to Be an American.*

Mr. Schield, who recently returned

(*Continued on page* 160)

The association's president-elect, Walter A. Schemmer, Schemmer Limestone Quarry (center), with two of the new directors, Glenn E. Moore, Midwest Limestone Co., (left), and Tom L. Robinson, Missouri Valley Limestone Co.

Robert E. Frampton, E. I. Sargent Quarries, Inc., (left), is the new vice-president of the group. Center and right are new directors, Forrest A. Thomas, L. & W. Construction Co., and Dennis Schildberg, Schildberg Construction Co.

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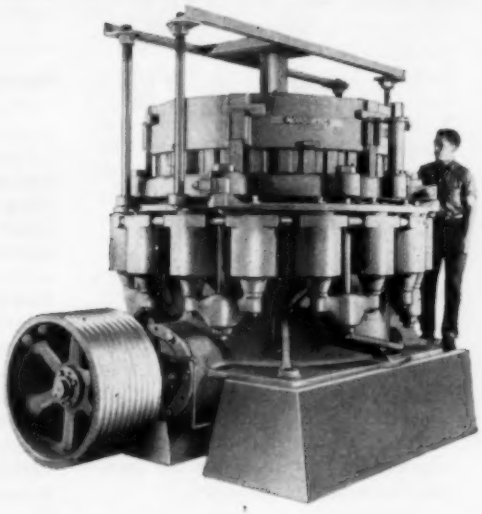
of finely crushed product?

. . . then you need the Gyradisc® CRUSHER

HERE *you see a handful of specification sand made by the Gyradisc Crusher . . . from a Pea Gravel feed, previously considered a "costly, difficult material to crush."*

This is but one example of what producers may expect of the Gyradisc Crusher . . . but more important, the Gyradisc in most cases substantially reduces the cost of producing a finely crushed product . . . such as manufactured sand or other specification material from a minus ¾" feed of crushed stone or Pea Gravel.

The Gyradisc Crusher is designed specifically for the low cost, large volume production of fines. If you are faced with a critical shortage of fine material, want to expand your market or want a profitable solution to the problem of handling and disposing of excessive Pea Gravel or other unsaleable material . . . it will pay you to investigate the Gyradisc. It has benefited other operators and may help you. *Nordberg Mfg. Co., Milwaukee, Wisconsin.*



Built to supplement the Symons® Cone Crusher, the 54" Gyradisc Crusher is providing volume production of still finer specification material. It is currently being used for the production of many materials such as agricultural limestone, limestone chips, sand, rock dust, crushed stone for asphalt mix and the fine reduction of asbestos and talc. *Write for Bulletin 228.*

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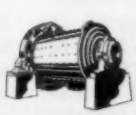
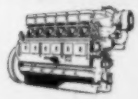
Symons Gyratory and Cone Crushers

Nordberg Grinding Mills



Symons Vibrating Grizzlies and Screens

Nordberg Engines . 10 to over 12,000 hp.



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NEW YORK • SAN FRANCISCO • ST. LOUIS • DULUTH • WASHINGTON
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and adopted a resolution urging congressional action on tax relief for small business.

Election of Officers New association officers for 1957 are headed by the president-elect, L. Miner Doolen, Telford Equipment Co., Lansing, Mich. Nominees elected to other top posts at the same time were: H. D. Anderson, Rish Equipment Co., Bluefield, W. Va., executive vice-president; J. A. Benson, Benson Tractor Co., Houston, Tex., vice-president; H. T. MacDonald, Kane Equipment Co., Winnepeg, Canada, vice-president; and F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., who enters a second term as vice-president. J. R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn., was re-elected treasurer of the group.

Along with the above officers, seven regional directors were installed. These include: Edward T. Credle, Credle Equipment Co., Utica, N. Y., region II; W. C. Coleman, Bemiss Equipment Corp., Richmond, Va., region IV; Robert J. Carroll, Carroll and Edwards Co., Cincinnati, Ohio, region VI; C. C. Tambornino, George T. Ryan Co., Minneapolis, Minn., region VIII; Jack H. Myracle, Herd Equipment Co., Oklahoma City, Okla., region X; Frank R. Cooper, Howard-Cooper Corp., Portland, Oreg., region XII; and Walter W. Kershaw, Wheeler-Kershaw Co., Salt Lake City, Utah, region XIV.

President's Address Reporting on the progress of the association, the retiring president, S. F. Laskey, Northwestern Equipment Co., Fargo, N. D., stated that A.E.D. now embodies more than 80 percent of all qualified construction equipment distributor companies and 95 percent of the top manufacturers in the industry.

With respect to current problems and objectives, Mr. Laskey pointed out that the new highway program will bring greatly increased demands for machinery and equipment. The main challenge is in how to finance the expansion within the industry, as well as how to finance the contractor customers in their purchases of equipment needed.

To study this problem, two association committees have been set up —one to acquaint the nation's bankers with the industry's story and the other to engage in a co-operative effort with other industry associations directed toward obtaining tax relief for small business.

Business Session A number of bankers were guests at that meeting, which was devoted to a discussion on financing problems. Frederick Salditt, vice-president, Harnischfeger Corp., in speaking on financing construction equipment, noted that during the next five years of the expanded highway program there will be an additional $1,000,000,000 worth of equipment that will have to be financed over and above the normal requirements for replacement.

Further, the manufacturing and distributing industry will have to be prepared to do about $350,000,000 more manufacturing and financing than recorded during 1956—an increase of about 28 percent.

Contractor-distributor relations were discussed by Dwight W. Winkelman, D. W. Winkelman Co., Syracuse, N. Y. Urging teamwork among distributors, manufacturers, and contractors, Mr. Winkelman, himself a contractor and a past-president of Associated General Contractors of America, pointed out that the industry cannot afford to relax. The future needs for construction are of such magnitude that increasing efficiency must be sought.

It was predicted that greater advances in machinery and methods will be brought about—the manufacturers will develop more efficient equipment to fill the contractors' varying needs; distributors will assume a larger role in providing the right machine for a particular job, as well as aiding in its maintenance; and the contractors will constantly improve the efficiency and economy of operating methods.

Special Events In addition to the general sessions, the annual meeting also included the semi-annual gathering of the Canadian Association of Equipment Distributors, a number of A.E.D. committee conferences, and a "clinic" attended by a number of delegates from local distributor associations.

The highlight of the social calendar was the association's 38th annual birthday party and the installation of officers, held in the Grand Ballroom of the Conrad Hilton. At the banquet, entertainment was provided by television and stage personalities.

Iowa Aglime Meeting

(*From page* 158)

from a European trip during which he had the opportunity to visit areas behind the Iron Curtain in Russia, titled his address, *Russia — They Don't Know Freedom*. The speaker apparently found it possible to speak with many ordinary members of the Russian populace with no interference from, or presence of, Communist agents and party members.

At the close of the business session the board of directors met to select association officers for the coming year. The new officers elected were: Walter A. Schemmer, president; and Robert E. Frampton, E. I. Sargent Quarries, Inc., Des Moines, vice-president. Clint A. Allen was again appointed to his post as executive secretary-treasurer of the association.

Zoning

(*From page* 128)

wide attention, not alone for the benefit of the industries involved, but also—and perhaps more importantly—for the proper utilization of valuable material resources. If there is to be regulation, it should be upon a uniform and scientifically considered basis. Only the state has the facilities and the financial ability to do this, and if there is to be zoning, the state should see to it through appropriate legislative action that these essential natural resources are not withdrawn from use and rendered sterile.

Col. Harry H. Haas has been named vice-president of operations for the administration of the Houdaille Industries, Inc., Buffalo, N. Y. The firm's facilities are located in New York, New Jersey, and Pennsylvania.

Since 1955, Colonel Haas has occupied the position of vice-president and general manager of the Buffalo Crushed Stone Corporation, a division of Houdaille Industries.

The election of John J. Gates to succeed Colonel Haas in his former position also was announced. Mr. Gates previously had been a special assistant to Ralph F. Peo, Houdaille president, in organization services.

Net profit of the Halliburton Oil Well Cementing Company in 1956 was reported at $18,428,000, compared with $16,263,958 in the previous 12-month period. Earnings per common share last year amounted to $5.08, against $4.96 in 1955.

Sales Agreements

(*From page* 154)

Have you ever discussed moisture allowances with a customer? We don't believe in shilly-shallying over this question, and we can't think of an improvement over our suggested clause: "The seller will not make any allowances to the buyer for moisture content in any materials supplied to the buyer by the seller."

Some of these questions seem so obvious of solution as not to require consideration. It would seem that any producer who quoted his material for a given project would certainly expect to furnish enough material to finish the project. However, experience has shown the need for the following clauase: "The quantities of materials mentioned in this agreement are the amounts estimated to be required for the job; however, it is understood that the seller will supply the actual amount of like material required to complete the job."

Claims The next clause is very necessary, and should be given due consideration. We believe everything in this clause is pertinent and reasonable. Some producers do not like to admit or suggest the possibility that a claim might arise, but this is playing ostrich! If you have never had a claim against you, there is a good chance you had a contract which clearly and concisely spelled out procedure for making such a claim, and which also placed a definite limit on such a claim. The clause we suggest has proven effective over the years: "Buyer's exceptions and claims shall be deemed waived unless made to seller in writing within one business day after receipt of materials. When so made, the seller shall be given a reasonable opportunity to investigate same. Seller's liability under this agreement shall in no event exceed the purchase price of the material against which claim is made."

Useful Provisions Again, we may wonder at the need of a clause such as this: "Buyer is to give seller complete shipping instructions within a reasonable time before shipments are to be made." However, don't leave it out of your agreement!

The next clause becomes more important with each passing year—and, even under a Republican administration, we never know what new taxes might be forthcoming: "Any applicable tax now or hereafter levied on materials supplied by the seller for this contract is not included in the prices of the materials, and will be in addition thereto, and to be paid for by the buyer."

Very often a buyer issues his own purchase order for materials. This clause aims at dispelling any confusion which might thus result: "It is agreed that when buyer issues his own purchase order for materials, such purchase orders are accepted by the seller only under the seller's general terms and conditions of sale."

We know of one claim which arose against a seller because of delay in deliveries. The delay was due to practically impassable roads into and on the project site. A clarification such as this will avoid such claims: "When delivery is to be by truck, the buyer agrees to provide suitable roadways or approaches to points of delivery. If adequate and suitable roadways are not available, the seller reserves the right to stop delivery until this condition is remedied."

Unfortunately, the buyer is not always concerned about whether others are operating profitably. There should be a provision for charging rental on delivery trucks when they are unreasonably delayed. The following agreement has proven effective, and seems fair to us: "The seller will allow the buyer 10 minutes free standing and/or unloading time on dump trucks, 15 minutes on truck and trailer. All additional time on each truck, until truck is discharged and is free to leave job, shall be paid for by the buyer on a truck rental basis."

A seller should stipulate that the material after leaving his plant is the property of the buyer. Our suggestion for so stipulating is: "Delivery of the seller's materials to the carrier shall constitute delivery thereof to the buyer. We are not responsible for materials en route, or for time of delivery."

Unpaid Bills Have you ever received a new order from a customer who owed you an old account? Has that customer ever wanted to discount the new order, and continue owing the old account? It has happened to us, and we like this clause: "Buyer hereby authorizes seller to apply any payments made by or on behalf of buyer to seller to any account or accounts then outstanding between buyer and seller, and buyer waives his right to require any particular application of such payment at the time of making same."

In closing, we have tried to impress upon you our conviction of the need for a signed agreement covering most sizable orders. We have suggested some clauses which we would consider to be standards in compiling such an agreement. Our association would render a valuable service by publishing a booklet on this subject.

Tanganyika Possible Site Of Portland Cement Plant

The Associated Portland Cement Manufacturers, Ltd., reportedly the largest cement-making combine in the world, may set up a cement plant in Tanganyika, Africa. The final decision depends upon the results of a survey made in the Dar es Salaam area.

According to G. J. Davis, managing director of the combine, the prospects in Dar es Salaam are good, but extensive survey work is necessary. He estimated the cost of setting up a facility at about £24,250,000.

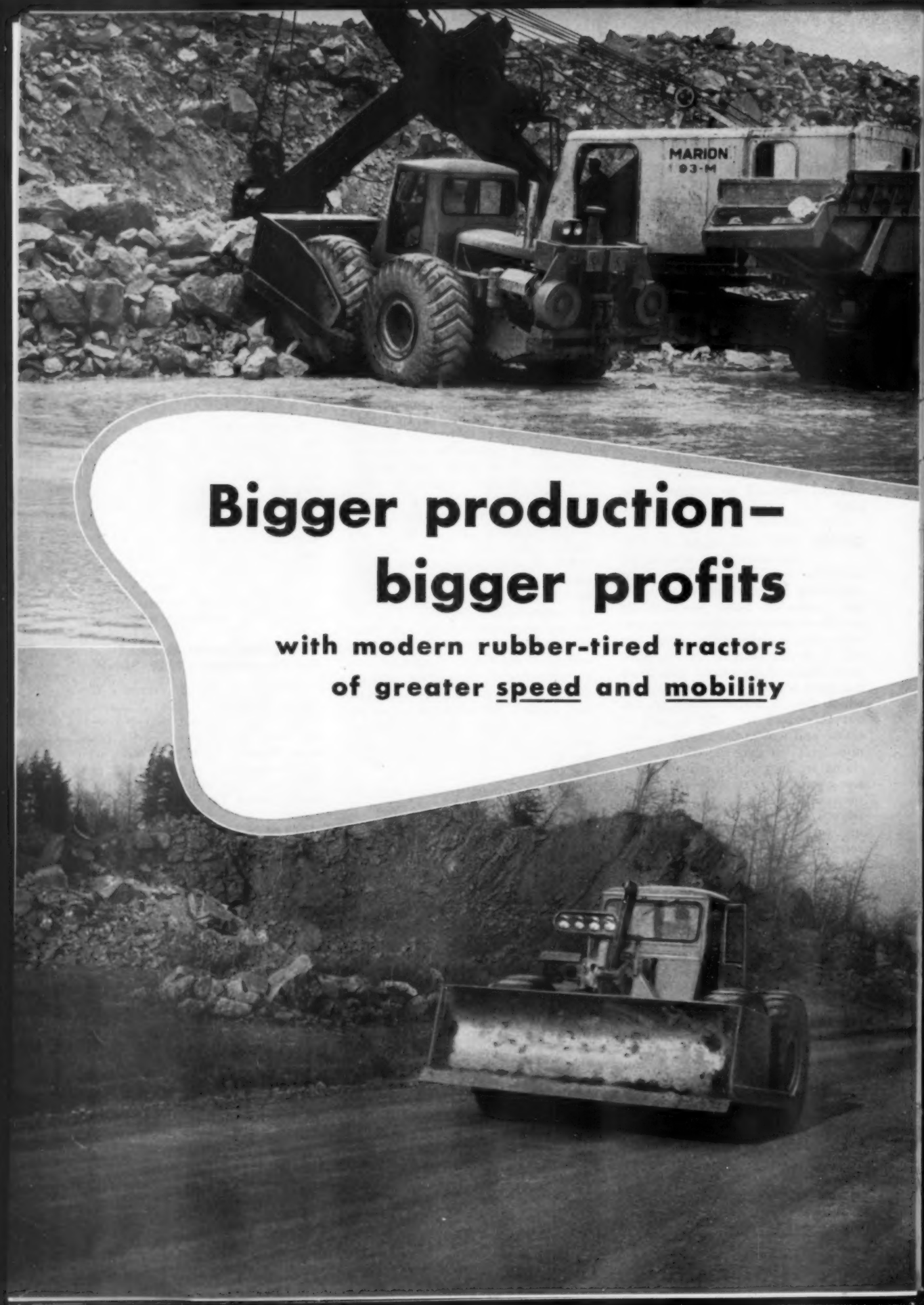
The proposed cement mill would have an initial output of 120,000 tons of cement a year, which is sufficient to satisfy the demand in Dar es Salaam and to meet most of Tanganyika's requirements. Capacity would be expanded, if necessary.

Heavy Equipment Ordered For Permanente's N.M. Plant

Officials of the Permanente Cement Company, San Francisco, Calif., have reported that engineering work on the new cement plant near Scholle, N. M., 12 miles west of Mountainair, is progressing rapidly, and that orders have already been placed for the heavy equipment.

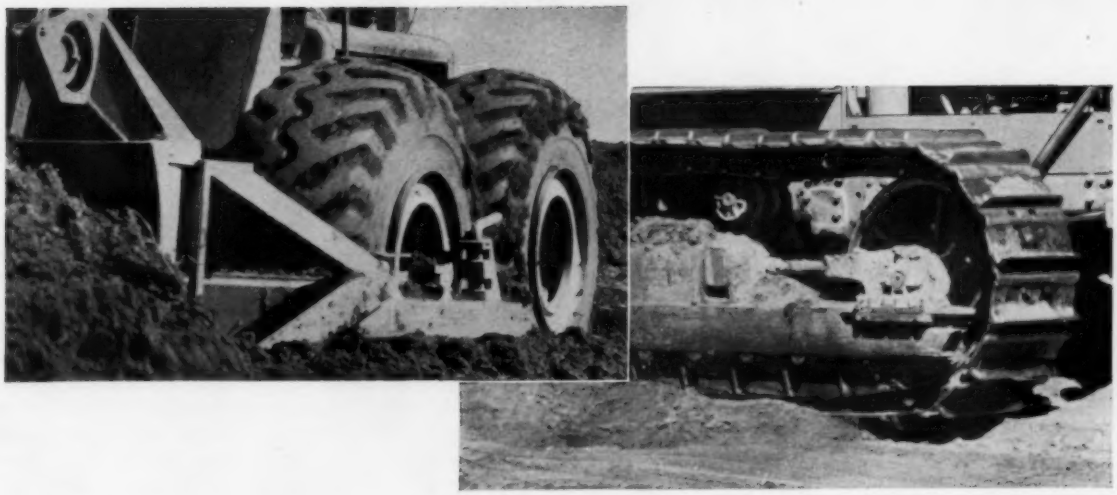
The kiln is to be 12 ft. in diameter and 450 ft. long, one of the largest pieces of moving equipment found in the industry. This is the same size as the kilns used in the two California plants owned by the company. The general layout of the buildings and equipment has been completed, and additional work at the plant site itself will depend upon the completion of all engineering work.

Hydrophobic Cement, a private company which has been formed in Germany, produces a type of cement which is said to be immune to atmospheric conditions. It is a portland cement to which an additive is introduced by spraying during the manufacturing process. The grains of cement are thus given a protective covering which prevents hydration.



Bigger production— bigger profits

with modern rubber-tired tractors of greater speed and mobility



Today's needs demand tractors that have 4 major dimensions

Your tractor requirements for work around pit and plant have changed considerably during the past few years. Time was when you could evaluate tractors on their drawbar pull or push — a combination of engine horsepower and the amount of traction developed. These 2 dimensions — *power and traction* — gave you the necessary performance to handle clean-up around yesterday's shovels . . . let you strip topsoil and level fill, in step with the production needs of that time. Fast dozing cycles, and the ability to speed from one assignment to another, were not considered essential back in the days of lower wages and longer time limits.

But today, with larger pits, big-capacity shovels (where clean-up interruptions are costly), and the demand for higher efficiency on stripping and maintenance work, *two new dimensions* are added to your tractor requirements. These extra dimensions are *speed* and *mobility*. Bigger shovels, with high operating cost, demand that clean-up delays be kept to a minimum. Higher production demands, to meet competition, require more speed all the way . . . from stripping overburden to leveling dump areas . . . pulling or pushing scrapers . . . towing equipment, and other tractor assignments.

With the trend to bigger pits and more widely scattered operations, *mobility* must be added to speed for efficient tractor operation. To handle scattered assignments economically, your tractor must be able to run — not crawl — from job-to-job under its *own* power.

Track-type tractors can capitalize fully on two of these dimensions — power and traction. Over the years they have become so universally well-recognized that a wide selection of track-type tractors, ranging in size to 436 hp, are offered by various manufacturers.

A few of these present-day heavy track-type tractors approach the third dimension — speed — in their work range. But a big track-type tractor that successfully utilizes the fourth dimension — *mobility* — is not yet available to meet today's need.

That is why you must think today of tractors in terms of *all four dimensions* . . . power — traction — speed — and *mobility* . . . to determine which of today's tractors will give you the greatest return on your investment.

To help you in your analysis of these heavy-duty tractors, and the extent to which they can measure up to your requirements, study the information presented on the following pages which explain in detail your need for

1. POWER

2. TRACTION

3. SPEED

4. MOBILITY

Before you buy, check all four dimensions. ▶

Dimension 1

POWER

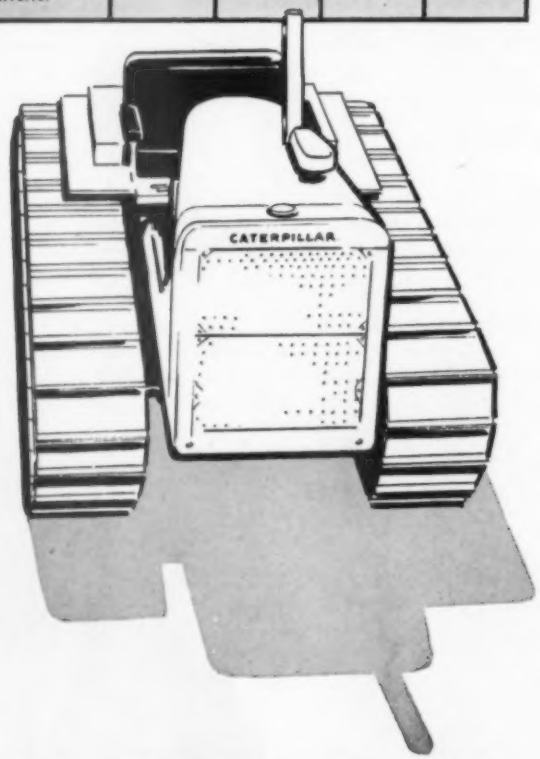
Compare engine horsepower... but as a source, not a "force"...

Adequate power is as important in today's pit operations as it was yesterday. It must be measured today, however, not only by its ability to "bull" a load, but by its ability to move the largest possible loads at the highest possible speeds, in the varied and scattered jobs assigned to present-day pit tractors.

Maximum horsepower ratings alone are without meaning. Ratings must be studied across the speed range to measure your power dimension. Measure also the time and effort required for the operator to change his ratio of power application to push-pull effort or to speed effort. Check the smoothness with which power is applied, the waste in "bucking" a load. Also, the difficulties in shifting which may discourage an operator from using gear ratios to apply his power effectively.

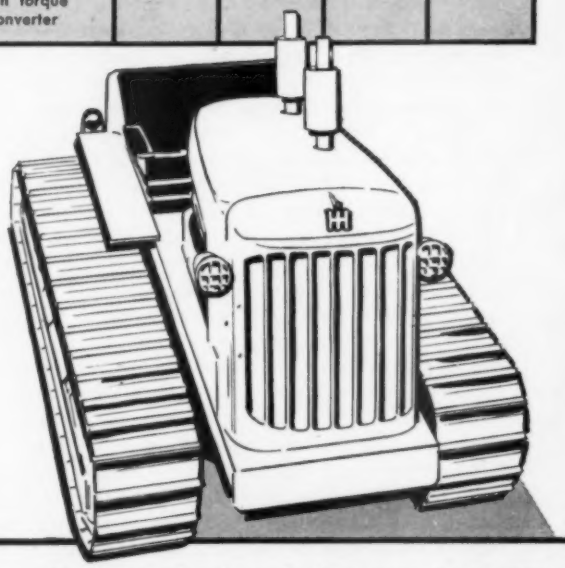
Power at maximum "drawbar" is used little for tractive effort since, in low gear, tracks spin and power is wasted. Availability of maximum horsepower is important only in higher gears where it can be used with no slippage. *All* tractors are able to spin their tracks or wheels in low gear on normal footing . . . therefore horsepower should be considered as a power source available for use in *any direction* . . . should not be related to tractive effort alone. The most effective power combination lets the operator work at the highest practical speeds which job conditions permit.

CAT D8 191 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	30,000	24,000	18,000	15,000



Figures taken from manufacturers' specification sheets available to us at time of printing.

IH TD24 200 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	32,500	22,500	18,000	15,000



Usable pounds-pull results from many factors: type of material, conditions underfoot, weight of tractor, and forward speed, all combined have a definite effect on the pounds of drawbar pull.

From the charts, you can see that Tournatractor compares favorably with track-type tractors at today's commonly used speeds. When job conditions are adverse, use a crawler; in ordinary and favorable conditions you can put your job into high gear with rubber-

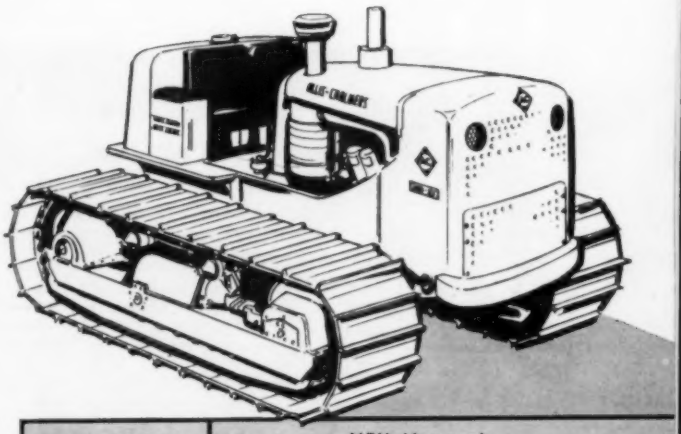
Dimension 2

TRACTION

Compare pounds pull...
but at your operating speeds...

The materials you handle partially determine your choice of tractors. Track-type tractors conquer the most adverse conditions and offer tremendous traction and drawbar pull in ordinary footing. However, today's broad, deep-treaded, tapered-bead rubber tires equal track-type traction in many materials. Where traction in loose materials is a factor, the rubber-tired tractor can be given additional traction by increasing its weight. Extra weight is easily obtained with hydroflation of tires.

This flexibility of weight will pay off in providing a tractor that can utilize its speed to the fullest extent — yet add tractive effort when needed to do a wider range of heavy-duty tractor work.

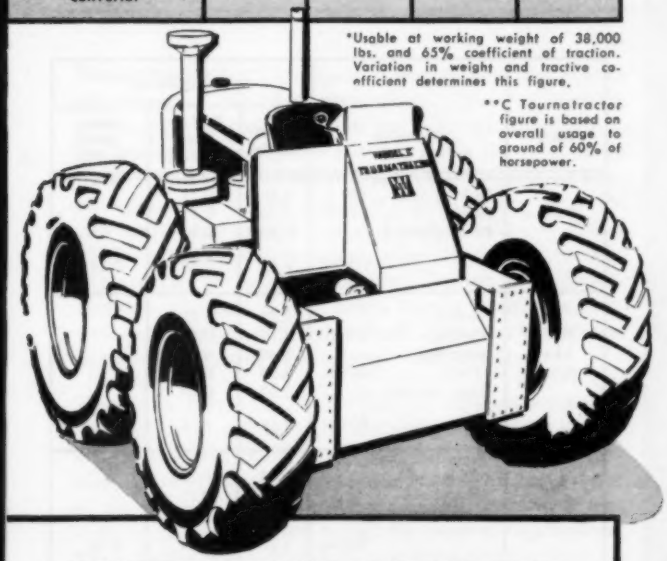


LeT-WEST C** 210 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	24,700*	23,500	18,800	15,650

AC HD21 204 hp with torque converter	MPH (Approx.)			
	1.5	2.0	2.5	3.0
	Pounds of pulling effort			
	Pounds-pull curve not shown in manufacturers' literature available to us.			

*Usable at working weight of 38,000 lbs. and 65% coefficient of traction. Variation in weight and tractive coefficient determines this figure.

**C Tournatractor figure is based on overall usage to ground of 60% of horsepower.



Comparable traction of tires to tracks, in some materials, is made possible by a wide choice of tire treads. A smooth-type tire, for example, works better than tracks in sand, because it doesn't dig in. Deep lateral cross-bars are designed for rock — the tire deflects over sharp rock and the deep tread prevents damage to the carcass. Diagonal bars give maximum bite in loose materials. Tournatractor tires — 2¼ feet wide, 5¾ feet high — are of double strength nylon cord and tough rubber. Inflated with only 20 pounds pressure, the tires flex over rough ground. Continual flexing of sidewall keeps the tread areas clean for a positive bite on each tire revolution.

Crawler tracks — long and wide — have shoes of steel with deep-biting grousers. At higher speeds, much of the engine output goes to power the tracks themselves. Much of the tracks' efficiency can be lost in gummy materials, since area between grousers fills in and tracks become smooth, flat belts. Accumulated mud and dirt on tracks and rollers also reduces theoretical power applied to pulling effort.

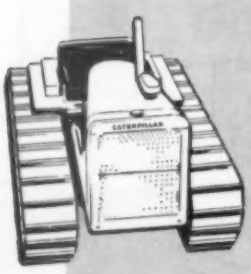
tired Tournatractor. Consider, too, how often you use all the traction available in track-type tractors. Ordinary dozing and push-loading are done in second and sometimes third gear, at speeds, ranging up to 2 miles per hour. High-speed dozing or loading with Tournatractor may require a thinner cut, but the excavated area is kept smooth, allowing faster travel of dozer and quicker entry and exit of scrapers. Too, it permits quicker return to work after wet weather.

before you buy, check all four dimensions . . . see next page

Dimension 3

SPEED

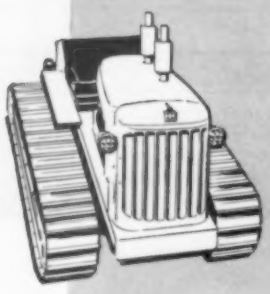
Compare speeds, and what they mean to profit...



CAT - D8

SPEEDS IN MPH

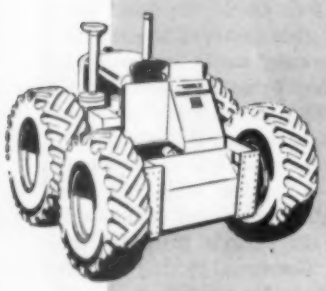
FORWARD	REVERSE
0 to 3.6 Low	0 to 3.6 Low
0 to 7.4 High	0 to 7.4 High



IH - TD24

SPEEDS IN MPH

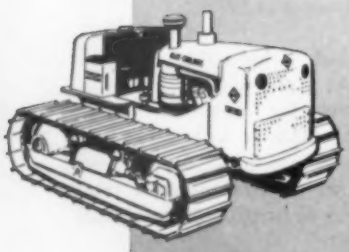
FORWARD	REVERSE
0 to 7.6	0 to 6.6



LeT-WEST C

SPEEDS IN MPH

FORWARD	REVERSE
0 to 17.2	0 to 7.2



AC - HD21

SPEEDS IN MPH

FORWARD	REVERSE
0 to 3.0 Low	0 to 5.5
0 to 7.5 High	

All above tractors equipped with torque converter. Figures taken from manufacturers' specification sheets available to us at time of printing.

Few heavy-duty tractors have kept pace with today's trend to high speed. Hauling units, loaders, shovels, scraper-combinations, and other types of pit equipment are now available on rubber for greater speed; yet most of the big tractors still roll on speed-limiting steel tracks. Habit, plus the large number of crawler-tractors still in use, make it easy to overlook the possibiilties of profit and time advantage available through use of the speed dimension. For instance, on an ordinary dozing cycle, if speed can cut your back-up time in half, you can increase the number of cycles per hour on this saving alone by 15%! Since costs remain constant, this increase in production is almost entirely profit! There is another point on speed that may be of interest. As crawler speeds are increased, and as the high gear-ranges are more extensively used, you add materially to the track-wear and overall maintenance expense.

The farther the travel distance, the more closely you should look into the advantages of rubber in the third dimension — *speed* — to increase your profits.

Work	Operation	Time (minutes)		
		Average Crawler	Rubber-Tired Tractor	Speed Saved in Min.
Dozing	Pushing load ..150 ft.	0.86	0.57	
	Return .....150 ft.	0.36	0.21	
	Gear changes	0.30	0.10	
	TOTAL	1.52	0.88	0.64
Pulling 15-yd. Scraper	Loading	0.75	1.25	
	Hauling .....1000 ft.	2.10	0.76	
	Spreading	0.40	0.40	
	Return .....1000 ft.	2.10	0.63	
	Gear changes	0.30	0.10	
	TOTAL	5.65	3.14	2.51
Push-loading	Loading	0.85	1.10	
	Return	0.42	0.21	
	Gear changes	0.30	0.10	
	TOTAL	1.57	1.41	0.16

Figures computed from manufacturers' specification sheets available to us at time of printing.

RESULT: With these minutes saved, you can doze more, haul more, do more clean-up . . . add extra profit with no extra cost.

advertisement

Dimension 4

MOBILITY

Why rubber-tired mobility means more work per shift

Only a rubber-tired tractor can readily travel from job-to-job in your pit or plant operations. It can run at speeds to 17 mph, shuttle fast between shovel clean-up and other assignments. The operator just shifts into high gear and your tractor is on its way, via haul road or across the pit floor to its next job, whether to strip overburden, level stockpiles, tow other equipment, or switch railroad cars.

Larger pit areas, and higher production requirements, make it necessary to have equipment that can move around fast and easy on its own power.

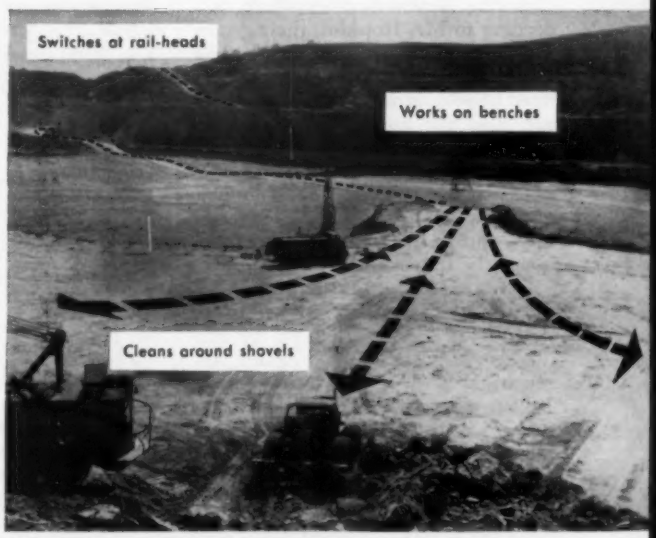
So the need for high-speed mobility is increasing each year, while the time and cost of moving track-type equipment designed for limited area work becomes higher and higher, cutting profits more and more.

In the light of these developments, it will pay you to consider the importance of *mobility* as a necessary tractor dimension in your pit operations.

Rubber-tired tractor travels at speeds up to 17 mph on work-and-run assignments. Operator can drive over pit floors, or off road. He can road his machine over tracks, ties, switches, and paving, without damage.

Tournatractor® is a modern tractor designed to take advantage of all four dimensions . . . *power, traction, speed* and *mobility*. It does not offer as much drawbar horsepower at speeds below 2 miles per hour as do track-type tractors of equal engine horsepower. But for pit operations where you *can* capitalize on the third and fourth dimensions — *speed* and *mobility* — with a machine that delivers comparable traction at present day speeds, we suggest you consider the *new* Tournatractor. The cost is 10% below that of track-type tractors with torque converters and comparable engine horsepower . . . and maintenance costs are lower.

There's a bonus-value for you in today's improved Tournatractor. A railroad coupler attachment is now available which converts this machine quickly to a practical SwitchTractor. With coupler at one end, and dozer at the other, this machine does double-duty . . . makes it an even more profitable tool for your pit operations. Your LeTourneau-Westinghouse Distributor will be happy to arrange a demonstration of a Tournatractor in your pit, to prove that its third and fourth dimensions — *speed* and *mobility* — can pay off for you. Ask him . . . or write the factory.



Sketched lines show range of rubber-tired tractor in typical mine. In foreground, tractor cleans-up around shovel. It ranges over entire pit floor for dozing, and on benches bordering the pit. Rail-head is only a few minutes drive away for switching work.

CT-1424-M

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

N.S.G.A. Convention

(*From page* 102)

would be an exchange of ideas, one of the basic tenets of all groups. In this, the member must talk with other producers, discuss with them mutual practical operating problems, and in meetings be the lecturer and instructor, whenever possible. The programs must be designed as to reach many levels of personnel, from top management to the man who actually does the job. All short courses sponsored by the Florida association are of one-day duration, held on Saturdays, and limited to 6 hours of program, which is infused with social activities. Included in the sources from which the programs are developed are the cement companies, P.C.A., Chamber of Commerce, local architects, lawyers and engineers, etc. A corollary development has been a series of short courses for such people, to educate them as to the association's products.

The results from such educational programs. Mr. Lenchuk declared, have been astounding and very satisfactory, have developed a tendency to standardize operating procedures and systems and to create "intelligent competition," in place of the practice of "frustrating one's neighbor," previously followed.

Public Relations The role of the local association in public relations work was covered in a paper by J. Revell Hopkins, secretary of the Michigan Ready Mixed Concrete Association, in which, according to Mr. Hopkins, their group has done the best job. In this, he has found that all too often producers must be sold on what public relations are, and the constructive purposes of them — to interchange information that will help the industry grow, as a clearing house for technical data, and the establishment of standards, and to tell the public the facts about the industry.

Legislative Activities Legislative activities, as carried on by the Texas Aggregates Association and the Texas Ready Mixed Concrete Association, was covered in great detail in an excellent paper by Ray L. Cain, executive secretary of these separate groups. Being chartered as non-profit organizations prohibited the groups from engaging in political activities, so that the policies pursued consisted in remaining anonymous and in watching pending legislation.

Mr. Cain emphasized that while this "homework" of the producers was conducted on a "grass roots level," each member was responsible in contacting his senator or representative, and explaining to them how each tax or other contemplated measure would effect his business. Especially vital laws were carefully scrutinized, such as those pertaining to industrial relations, safety, workmen's compensation, vehicle load limits, registration of vehicles, pollution, water legislation, etc. In this work, Mr. Cain declared that it was necessary that the producer know his product, know with whom he is dealing, and present his story in a straightforward and honest manner.

WATERWAYS SESSION

Proposed Tolls River operators were attracted to a session on Monday afternoon, presided over by E. K. Davison (J. K. Davison & Bro., Pittsburgh) at which emphasis was placed on their own particular problems.

Albert H. Shiely (J. L. Shiely Co., St. Paul) thoroughly covered the danger of passage of legislation which might seek to levy tolls on the use of navigable waters in this country. The idea of use charges upon the nation's traditionally free avenues of commerce, including the waterways, started way back in 1822 when President Monroe vetoed a bill which would have imposed a toll on the Cumberland Road, principal avenue of westward migration at that time. Just 130 years later, in April, 1952, a similar bill was presented, this one to make a use, or ton-mile, charge on the inland waterways. The bill met defeat but, Mr. Shiely warned, in the government's constant search for revenue there is no assurance that this bill in the same or a different form will not be presented in a future congressional session.

The immediate excuse for such legislation followed on the heels of the Hoover Commission's recommendation that Congress authorize a use charge on the waterways "sufficient to cover maintenance and operation and authorize the Interstate Commerce Commission to fix such charges."

Organized backing for such legislation, Mr. Shiely reported, comes from the railroads who have long pleaded that they are discriminated against when the government takes tax money to develop and maintain the inland waterways without making a charge for their use.

In making his case against any levying of such tolls, Mr. Shiely set up the following seven main points:

1. That the waterways are necessary to the country's defense and should be maintained.

2. That a use tax on waterway commerce would violate a solemn promise of our founding fathers that the waterways should remain forever free.

3. That such a tax on inland waterways alone would be unconstitutional.

4. That the power to tax being the power to destroy, a destruction of the use of the waterways would be a major economic catastrophe.

5. That such a tax would actually result in an ultimate decrease in overall revenue.

6. That low transportation costs are the cement which binds the country together economically.

7. That the discrimination claimed by the railroads could more simply be removed by lowering the gross earnings tax currently being paid by the railroads.

Percentage Depletion Do dredge operators on navigable waters stand a chance of obtaining percentage-depletion allowances in the forseeable future? In the opinion of the association's counsel, John T. Sapienza, the prospect is not too bright. However, a legislative proposal (H.R. 2391) seeking such relief has already been presented to Congress and has been referred to the House Ways and Means Committee. "I wish I could honestly say that the chance of the bill's passage was good," Mr. Sapienza said, "but it appears far from encouraging at the moment." Continued heavy federal spending requires tremendous revenues and opposition to any new legislation which would result in a diminution of these revenues — whether by tax reduction, or indirectly—currently is strong.

The position taken by the Treasury Department in the past has been that river sand-and-gravel deposits are constantly being replenished by nature and operators do not, therefore, have an economic interest on which to base a claim for depletion. Still, Mr. Sapienza feels that payment of royalties may legally establish such claim for economic interest.

If relief fails in the present session, he is of the opinion that efforts should certainly be redoubled in 1958, when the chance for the bill's passage would be much more favorable than at present since both political parties are almost certain to be clamoring for various forms of tax relief in the next congressional election year.

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Last week I received an interesting letter from an official of a large corporation engaged in manufacturing concrete blocks, burial vaults, etc. This letter read, in part, as follows: "I have been told by some people that a patent can be obtained on an invention made up of several old and well known elements. Others deny that such a patent can be obtained. Can you set me straight on this matter? I have read all your legal writings in PIT AND QUARRY for many years, and hope to receive your advice in this matter. I have invented what I think is a valuable invention but all the parts in it are old. In other words I just took some old parts and put them together. It works well but I do not want to spend $350 in trying to get a patent unless I feel certain I can get it."

Broadly speaking, the answer to this question is yes. An inventor can be awarded a patent on a device consisting of old and well known parts or elements, provided the device produces new and valuable results.

Last month a higher court clearly upheld this law. In view of the importance of this decision, I shall review it somewhat in detail.

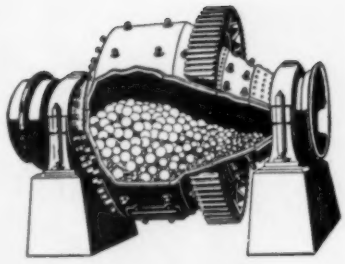
For example, in *B. Company v. I. D. Lain Company,* 230 F. (2d) 373, the testimony showed facts, as follows: An inventor named Bushnell obtained a patent pertaining to a mechanism for paving concrete highways and to methods employed in its operation. Bushnell sold and assigned this patent to the B. Company. The patent called for a mechanism comprising a car having a strike-off blade which was adjustably mounted. The blade had a narrow bottom working edge which engaged the concrete paving material and left a surface which is rough, fissured, and porous. Also, there is a mechanism behind the scraper for vibrating the paving material to close the fissures. Then another element had a smooth surface to wipe over the paving material and seal its surface.

Although the lower court held the patent invalid, saying that all the mechanism was old and well known, the higher court reversed the verdict. This higher court explained that for a long time road builders and engineers knew that a thin waterly concrete, though it flowed more easily and was more readily adaptable to the levelling off process, would not result in as strong a roadway as when a heavier concrete containing less water is used. Consequently, the industry found it essential that the heavier concrete be employed in order to meet engineering specifications for highways designed to resist constant wear from traffic. Though they recognized this essential principle, builders encountered difficulty in meeting specifications calling for the heavier concrete, for the reason that the latter material does not flow so freely, and does not pack so perfectly, as does the lighter, more watery mixture.

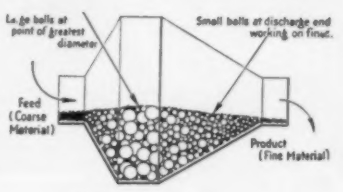
Hence Bushnell's patent was obtained for a mechanism which left the heavy concrete rough and porous; then vibrated the concrete to eliminate the pores; and then smoothed off the top surface of the roadway.

The higher court held the patent valid although various old and well known patents disclosed other methods of vibrating rough and porous concrete to eliminate the pores, and other mechanisms had been used to smooth off the upper surface of the roadway. This court said:

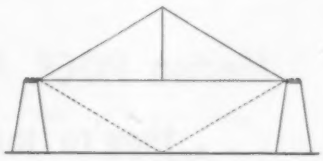
"Bushnell included the conventional machine with a spreader and a cut-off scraper. But, in addition, he did something nobody else had done up to that time. He specified that the vibrating member, which was known in the art, should be placed behind the cut-off scraper. Thereby, it stirred and vibrated the porous and fissured concrete left behind by the narrow scraper. At the same time, he declared that the cut-off scraper should be narrow, for the reason, as he said, that one of such character leaves a rough and porous surface readily adaptable to treatment by the vibrating member. In other words, all this produced a new and a useful result which had not been accomplished by any of the workers in the art prior to that time. In placing the vibratory member in the exact position which he specified, behind a cut-off scraper of the



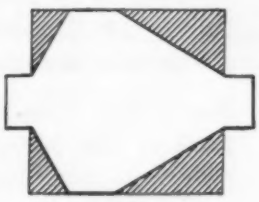
for
BALL
SEGREGATION
Hardinge
Conical Mills


Large balls at point of greatest diameter
Small balls at discharge end working on finest.
Feed (Coarse Material)
Product (Fine Material)

Ball segregation . . .



Truss-like structure . . .

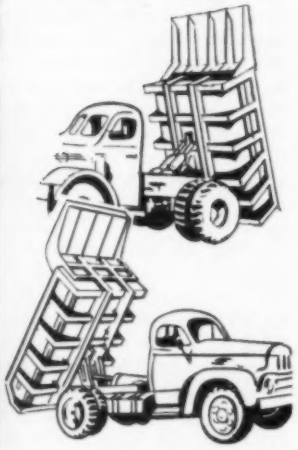


No dead corners . . .

The conical shape of the Hardinge Mill causes a rapid circulation and classifying action within the drum, which increases the capacity for power expended over other types. The range of grinding is large, due to the segregation of the sizes within the mill. The conical shape insures extreme rigidity and simplicity. Mechanical troubles are practically unknown. Sizes range from 2 feet to 10 feet with capacities from a few pounds per hour to 100 tons per hour. Bulletin 17-C-8 gives full details of dry grinding applications. Bulletin AH-389-8, wet grinding.

HARDINGE
COMPANY, INCORPORATED
YORK, PENNSYLVANIA · 240 Arch St. · Main Office and Works
New York · Toronto · Chicago · Hibbing · Houston · Salt Lake City · San Francisco

TODAY'S BIGGEST VALUES IN ORE AND ROCK MOVERS



Marion rock bodies can be mounted with twin jack telescopic hoists (photo at left and top illustration) and with double arm underbody hoists (bottom illustration).

Marion ROCK BODIES and HOISTS . . . they're made to stand abuse

Designed for the severest type of service, Marions are built to take it under a shovel on all types of rugged off-highway operations.

Heavy steel armor plate combined with thick oak planking and on-the-job designing is assurance of "day-in day-out," long-life use from all Marion rock bodies. Together with heavy-duty Marion hoists, these rugged bodies will move big payloads fast with minimum downtime and maintenance costs. The result is substantial savings over a period of many years, making Marion rock bodies and hoists today's biggest values for handling rock and ore.

MARION
BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO, U.S.A.

specific narrow character which leaves a porous, fissured surface, with the resultant removal of the air cells and honeycomb faults previously existing, what he did, we are sure, clearly amounted not merely to an aggregation of old elements where each did the work it had done before, but to a combination wherein the co-operating relationship of the cut-off and the vibratory member were such that he achieved the new beneficial result of eradication of the defects previously encountered in using heavy concrete."

This court went on to say that selecting elements out of old combinations and putting them together in a new way constitutes a patentable invention if a new and surprising result is achieved.

For other higher court decisions which uphold this law, see *Lewyt Corp. v. Health-Mor, Inc.*, Cir. 181 F. (2d) 855, certiorari denied 340 U. S. 823, 71 S. Ct. 57, 95 L. Ed. 605; *Helms Products, Inc. v. Lake Shore Mfg. Co.* 7 Cir. 227 F. (2d) 677, and *Ajax Co. v. Superior Hand Brake Co.* 7 Cir. 132 F. (2d) 606.

Employer's Liability

A reader asked this question: "When is an employer bound by guarantees and other statements made by a salesman? A few weeks ago a materials salesman took an order from me and guaranteed delivery of the mechandise within three weeks. What recourse have I, as the merchandise has not yet arrived?"

An employer is bound by a guarantee made by a salesman if (1) the testimony shows that the employer notified the purchaser that he will be bound by contracts, statements and guarantees made by the salesman; or (2) if in the past the salesman's employer has been in the habit of filling all orders and contracts made by the salesman. (Under these circumstances the court may imply that the salesman is authorized to make valid contracts.); or (3) if the salesman practiced actual fraud, under which circumstances the employer is responsible although he did not expressly or impliedly authorize the salesman to perform the fraudulent acts, or make the fraudulent statement or guarantee.

Readers may readily determine their legal rights by reference to this dependable legal rule.

Law of Printed Contracts

Recently an executive of a cement plant wrote, in part, as follows: "Several months ago our corpora-

(*Continued on page* 174)

105 Tractor—Excavator powered by 143 HP GMC Diesel engine can lift and load single pieces up to 12 tons.

THE EIMCO 105 EXCAVATOR LOADS MORE - FASTER . . CHEAPER

Eimco 105 Tractor-Excavators operate on a 10 to 12 second loading cycle. This speed can be maintained under ideal conditions.

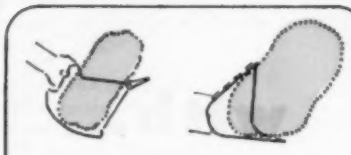
Greater Capacity at 1/3 Initial Cost -

In tough conditions the 105 will out-perform other excavating equipment on a more impressive scale. It will pick up and discharge into the haulage unit much larger pieces of material than will go thru the bottom of a bucket on a boom shovel of equal (1½yd.) capacity.

The 105 will exert greater digging force at the bucket lip than the larger, more expensive boom equipment - often eliminating blasting.

Equipment used around boom shovels such as bulldozers (for pushing up the broken rock) are eliminated with the Eimco 105 because this maneuverable tractor mounted excavator does its own bulldozing.

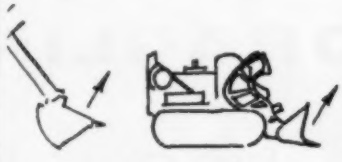
Eimco 105's are rugged, heavy duty machines, built to stay working on the job. Proven overall operating and maintenance costs are 40% less than boom shovels of same bucket capacity. Independent final drives provide greater maneuverability. Up-front position for the operator gives him full visibility. There are many other advantages in the 105. Write for complete information.



COMPARE

BOOM SHOVEL—EIMCO

11/2 yard boom bucket loading is limited to size that will go thru bucket. Eimco 11/2 yard bucket load is limited only to weight machine can lift.



COMPARE

BOOM SHOVEL—EIMCO

Digging effort on 11/2 yard boom shovel (45° boom angle bucket on ground) 24,000#. Digging effort on 11/2 yard Eimco shovel 39,200#.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Pittsburgh, Pa. Seattle, Wash.
Cleveland, Ohio Houston, Tex. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-245

bring "cost-per-yard"

Down to Earth

with...

HENDRIX

DRAGLINE BUCKETS

Expert engineering, superior workmanship and the higher quality materials that go into all Hendrix Buckets keep them ON THE JOB ...and they STAY ON THE JOB to move more material at a lower "cost-per-yard."

A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

FORMER POWER UNIT SALESMAN

switches engine brands

AS BUYER...

Lynn McMillen sold competitive units six years, but purchases International UD-18A for his crusher

If you've wondered what power unit salesmen would actually buy if they were in the rock products business, here's a clue.

Lynn McMillen, partner in McM Materials, Inc., St. Charles, Mo., states: "I sold competitive power units for six years, but this International UD-18A on our Cedar Rapids crusher is a good engine. We've had no major repairs on it in nearly two years' operation."

That's something to think about, an experienced engine salesman preferring a dependable International diesel when his profits depended upon production. And when you switch to Internationals you can choose from a full line of 16 diesel and carbureted power units—one for every size pit or quarry machine. In addition to bonus-power, you'll get bonus-service from your always-available International Power Unit Distributor or Dealer. Call him soon.

This 125 hp International UD-18A six-cylinder diesel power unit puts a 5-yd truckful of gravel through the Cedar Rapids Junior Tandem Crusher in less than 200 seconds. Ten-yard trucks are filled in six minutes.

INTERNATIONAL® CONSTRUCTION EQUIPMENT

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors ... Self-Propelled Scrapers and Bottom-Dumps ... Crawler and Rubber-Tired Loaders ... Off-Highway Trucks ... Diesel and Carbureted Engines ... Motor Trucks

Speaking of Classification...

CAN YOUR CLASSIFIER DO A JOB LIKE THIS?

BLUE STONE
RIP - RAP
FIRE PLACE
CRUSHED STONE
BUILDING STONE

ROAD BUILDING & EXCAVATION
CELLARS
DITCHES
ROCK OR DIRT
SWIMMING POOLS

SAND & GRAVEL
FILTER STONE
COBBLE STONE
CLASS A B & C
CHIMNEY STONE

L & S CONSTRUCTION COMPANY
· TELEPHONE 5856 ·
72 GLEN STREET · KINGSTON, NEW YORK

Charles E. Wood Company
906 N. Water Street
Milwaukee 2, Wis.

Gentlemen:

We have now used our 60" Auto Vortex Cone Classifier equipped with a Vortex Head to produce more than 1500 truck loads of filter sand. The loads averaged 10 cu. yds. each and not one truck load has been rejected.

Under various pit conditions we have consistantly made a split at 90 - 92% retained on 48 mesh and with less than 5% passing 60 mesh.

The specifications were enforced to the letter, and rightfully so, as the project was for the Margaretville-Arkville Sewage Treatment Plant built to protect the drinking water for the people of the City of New York.

Very truly yours,

Steve E. Smith

This kind of performance makes friends for Auto-Vortex . . . a single Cone doing a special job well. • Auto-Vortex Classifiers will give you the same high performance in meeting CONCRETE SAND specifications. • They will eliminate your excess middle size **without wasting your valuable passing 50 mesh sand.** • Or, they will make a separate product out of this excess middle size. • Then, the Auto-Vortex BOWL Classifier will recover your passing 50 and 100 mesh sand and PUT IT IN YOUR PRODUCT without expensive pumping or bailing out of your waste pond.

CHARLES E. WOOD CO.
AUTO VORTEX CLASSIFIERS
906 N. WATER ST. • MILWAUKEE 2, WIS.

Write today for more information on how to get sharp gradations inexpensively!

Legal Decisions

(*From page* 170)

tion made a contract to sell a quantity of cement. This contract is on our regular printed form which has a small paragraph in small type stating that we are not responsible for delayed deliveries for causes beyond our control. A strike delayed us . . .

"Now, we have a suit on our hands filed by a purchaser who declares that he did not see nor read this paragraph and that he made every preparation to begin using this cement on the date we promised delivery. It seems to me there should be some simple rule to which I can refer in cases of this kind and know what to do and what not to do in order to save time and money required to fight law suits arising from contracts. I have read your legal writings for many years and naturally assume that, with your broad experience, you can formulate such a rule, if you have time to do so. Will you please do this and also advise me whether or not you think that we can win the above law suit?"

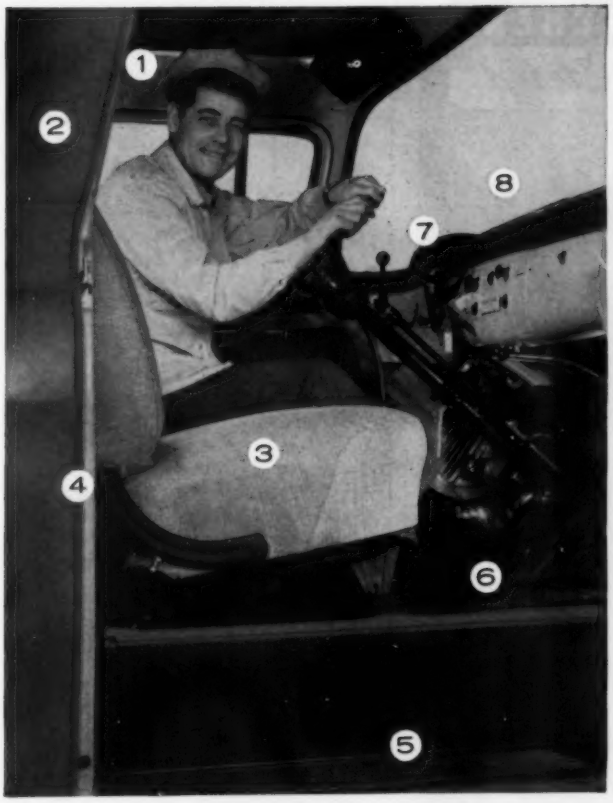
The answer is yes, provided you can prove that a representative of your corporation directed the buyer's attention to the small type.

The higher courts consistently hold that a notification printed in small or inconspicuous type is not valid or effective unless it is referred to in the body of the contract, or directed to the attention of the other conracting party. The courts believe that a small and inconspicuous notification in a contract, letter head, order form, or other contract does not represent the "intentions" of both of the contracting parties and therefore the "minds" of the parties do not "meet."

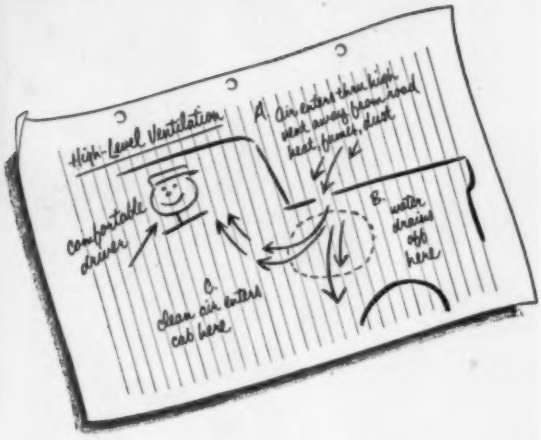
The same relatively simple law is effective with respect to contracts partly printed and partly pen-written. In other words, a printed statement or notice in a contract, receipt, bill head, bill of lading, order form, or letter head is not valid or effective if such printed statement is contradictory to either typewritten or pen written portions of the instrument. Modern courts hold that contract clauses have priority, as follows: (1) pen-written; (2) typewritten; (3) printed. For example, a leading higher court (110 N. E. 618) said:

"Where a contract contains two repugnant provisions, one printed and the other written, it is well settled that the latter must control the interpretation of the instrument, as it is presumed to express the latest intention of the parties . . ."

Under all circumstances, when de-



in a Chevy cab, even the air is better!


High-Level Ventilation
A. Air enters thru high-level ducts, away from road heat, fumes, dust
comfortable driver
B. water drains off here
C. Clean air enters cab here

...more evidence that Chevrolet Task•Force Trucks are engineered better and built better for bigger savings!

These cab features give you extra comfort and safety behind the wheel, extra savings on truck maintenance. And they're proof that the most modern trucks for your money are Chevrolets!

The drawing "doodled" above shows how Chevy's High-Level ventilation provides a *comfortable* interior . . . and the numbers in the big picture point out other advantages equally as good to have around you when you haul! They include:

1 *A roof that's specially built for safer, more comfortable hauling.* Sturdy all-steel construction adds to safety; roof's unique inner reinforcement insulates the overhead against heat.

2 *A gleaming, durable baked enamel outside finish.* Here's the reason your Chevy's exterior will resist wear better, look like new longer! This handsome finish is available in a wide variety of colors.

3 *A Nu-Flex seat that beats the bumps!* Deep-comfort coil springs, metered air shock damping and 3-way adjustment let you take it easy on tough jobs!

4 *A cab that's rustproofed to last!* Doors and similar surfaces are rustproofed on the inside as well as on the outside by immersion.

5 *Concealed Safety Steps for convenience.* Inside each cab door, they give you firmer footing, make entering or leaving the cab easier and safer.

6 *An undercoated floor, cowl side panels and fender flanges.* Virtually all exposed surfaces on the underside of the cab are protected by an anti-rust coating.

7 *A non-glare instrument panel to make driving safer!* The textured finish on upper portion of Chevy's instrument panel reduces blinding sun reflections, minimizes eyestrain.

8 *A reliable 2-speed electric windshield wiper* on each side.* Powered by electricity, their action remains *constant* under all conditions.

Such advantages as these (we've shown only a few) combine to make *everything* better in a 1957 Chevrolet truck! You'll see for yourself when you visit your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Standard in Series 5-6-7-8-9-10000 models.*

...biggest sellers because they're the biggest savers! CHEVROLET

CHEVROLET TASK•FORCE 57 TRUCKS

Improving wire rope service with LESCHEN Red-Strand HKP

This is the kind of super-duty job

——where Leschen Flattened Strand wire rope often outlasts others by 100% or more.

Your nearby Leschen man can give you all the facts—and service records to prove them. Your own records—after using Leschen Flattened Strand—may very well give you final proof.

Leschen Wire Rope Division,
H. K. Porter Company, Inc., St. Louis 12, Mo.

HKP LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.

ciding whether a contract or any part of it is valid and enforceable, the court endeavors to determine the original intentions of the parties at the time a contract is made. Hence, an inconspicuous sentence or clause in small print which does not ordinarily represent the true intentions of both contracting parties is void. This rule of law is applicable to all written instruments. See *Carter, 108 So. (2d) 415,* where a seller wrote a letter to a purchaser. Printed in small type at the very bottom of the letter was the notification that no employee or agent could modify the terms of a contract.

In the subsequent suit, the higher court refused to hold that the printed notification made the writer not responsible for unauthorized promises made by his employee. This court also held that the body of the letter was prior in importance because it was typewritten, whereas the notification was printed.

Circumstances Vary Law

It is true, of course, that peculiar circumstances may vary the above explained usual law. Thus, under all circumstances contracting parties are obligated directly as to their original intentions.

For example, in *Brown,* 142 S. W. 1108, it was shown that a notification printed in small type appeared in a corner of a contract. It read:

"All contracts subject to strikes, accidents, and causes beyond our control."

In subsequent litigation, this court held that both the buyer and seller were obligated by this notification because the testimony showed that in past dealings both the buyer and seller had discussed this notification; both knew that it was in the contract; and both intended to be obligated by it when they signed the contract.

For comparison, see *Allison,* 246 Pac. 331. The testimony showed that a seller had printed in inconspicuous type on an order form a notification that no claims on unsatisfactory merchandise will be honored unless the complaint is made within 15 days after delivery of the goods. These order forms were signed by the purchaser, but in subsequent litigation the higher court held the purchaser was not obligated by this notification. This court said:

"The rule seems to be well established that printed conditions on letters or bills of lading or other blanks which are not especially referred to or called to the attention of the other party to the contract,

(*Continued on page* 180)

A new bulk-packed blasting agent with high velocity...for medium to fairly hard shooting

Du Pont "Nitramite®" F. R.

Here's a new blasting agent, ideal for coyote shooting or for pouring in drill holes of 3" diameter or over. Du Pont "Nitramite" F.R. has all the safety features of other blasting agents plus a much higher order of performance than other ammonium nitrate products.

While it must be loaded under dry conditions, it can be used as a top load in wet holes above a water resistant blasting agent or standard explosive to achieve maximum shooting economy. Standard "Nitramite" or "Nitramon" primers provide most effective initiation plus the ultimate in safety. The density of "Nitramite" F. R. ranges up to 1.15 depending on method of packing. It is headache-free.

Most economical unit weighs fifty pounds and is packed in 5-ply multi-wall paper bags or asphalt-lined burlap bags. Other type containers are available for special applications at slightly higher cost.

Contact your Du Pont Explosives representative for complete information, or write E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Del.

DU PONT BLASTING AGENTS

Products of Du Pont Research

DU PONT

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

"Comes out with a Heaped Load every time"

40° Break-out at Ground Level

You can get *heaped bucket loads* and you get them *faster* and *easier* with this new bucket action. Most important of all — you *keep bigger payloads* because the bucket can be tipped back a full 40 degrees at ground level *before* it is raised with less spillage while digging and while carrying.

Tremendous Pry-out Action

Tremendous pry-out force is obtained by using the breakout pads on the ground as a fulcrum for leverage. The load forces opposing the pry-out action are thus transferred to the ground through the pads instead of being concentrated on the front axles and wheels.

Power Transfer Differentials

This exclusive "PAYLOADER" feature makes 4-wheel-drive traction even more reliable. The wheels with the best footing get the most power. You get traction and *action* instead of wheel-spinning inaction on sand, gravel and snow.

"No-Stop" Power-shift

Instant finger-tip shifting — on the go. There's no stopping for a RANGE shift, no "clutching." Forward, reverse control can also be operated under full engine speed, in any gear . . . all this plus torque converter drive.

Manchester Sand–Gravel and Cement Co., Inc. has been a "PAYLOADER" user for many years. It now has 3 model HM's — the pioneer 4-wheel-drive tractor-shovels — and a big 2¼ cu. yd. model HO purchased in July, 1956.

Fred J. Doyle is Plant Superintendent at the Hookset, N.H. stationary plant that produces 11 sizes of stone and 3 grades of sand. Voicing their satisfaction with the new power-shift model HO, he says, "The pry-out bucket action does a beautiful job — comes out with a heaped load every time. New HO has loaded out up to 2,000 cubic yards in 10 hours operation. We have also found the HO excellent for shifting rail cars."

Owners of pits, quarries, mines and plants continue to show their preference for rubber-tired tractor-shovels because of their greater mobility and usefulness. And among rubber-tired tractor-shovels none can match the combination of versatility and productive capacity of the new 4-wheel-drive "PAYLOADER" units, size for size.

More reliable traction . . . easier, faster and safer operation . . . greater digging power are some of the "PAYLOADER" advantages that appeal to operators who know tractor-shovels best. Your "PAYLOADER" Distributor wants you to prove on your own work that these new units are the most useful, productive and profitable tractor-shovels you can own. A call will bring you a demonstration.

Hydraulic Load-Shock-Absorber

This load-shock-absorber in the hydraulic system smooths out the ride, permits faster load-carrying speeds over rough terrain — with less spillage. You get more load in the bucket — you keep more in the bucket while traveling at higher speeds . . . and the result — you deliver more yards per load and more loads per hour.

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
750 Sunnyside Ave., Libertyville, Ill.

Send data on 4-wheel-drive tractor-shovels as checked:

- ☐ Model HO (2¼ Yd. Payload, 1¾ Yd. Struck)
- ☐ Model HH (1¾ Yd. Payload, 1⅓ Yd. Struck)
- ☐ Model HU (1⅓ Yd. Payload, 1 Yd. Struck)

Name _____

Title _____

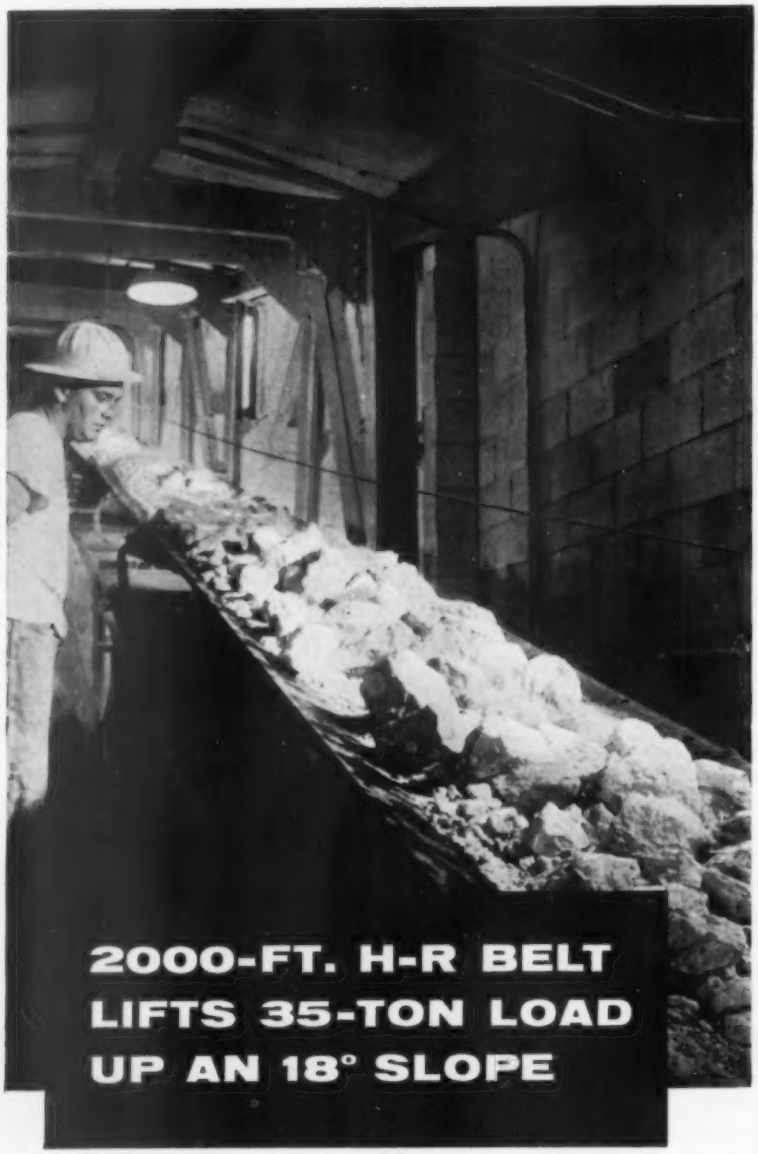
Company _____

Street _____

City _____

State _____

55



National Gypsum Company's Shoals, Ind. mine has a Hewitt-Robins conveyor with the highest tensioned textile carcass conveyor belt in existence. Because of the terrific strength of this H-R Super Raynile belt, the 250 hp. motor and H-R Jones speed reducer can start this 2,065 ft. conveyor with a 70,000 lb. load on an 18° slope.

Here, as in hundreds of other installations, Hewitt-Robins engineered, manufactured and installed the complete bulk materials handling system. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Conn.

HR HEWITT-ROBINS

CONVEYOR BELTING AND IDLERS...POWER TRANSMISSION DRIVES
INDUSTRIAL HOSE...VIBRATING CONVEYORS, SCREENS & SHAKEOUTS

Legal Decisions

(*From page* 176)

will not be regarded as a part thereof."

On the other hand, this rule of law is not applicable to written contracts if the testimony shows that both parties read and understand the complete contract including the various inconspicuous clauses. Otherwise the contract is void.

See *Parker*, 64 S. E. (2d) 533, in which a buyer and seller signed a printed contract. Later the seller failed to deliver certain merchandise to a purchaser relying upon a notification that said, "All contracts are contingent upon strikes, accidents and other causes beyond our control." The higher court promptly held this notification void. This court said:

"Even where a printed form of contracts is used, but terms are written into it which are variance with the printed matter, the writing will control."

Lessor Liable for Damages

A few weeks ago, a higher court rendered an important decision which clearly answers a legal question presented to me by a quarry owner: "Is a quarry company liable to a land owner for damages caused the land during exploring and testing operations if the land owner received no royalties from the quarry company?"

For illustration, in *Austin Road Company v. Boston*, 292 S. W. (2d) 373, the testimony showed the facts as follows: The Austin Road Company leased certain land from its owner, named Boston, for the purpose of exploring for and mining stone.

The Austin Road Company found no stone suitable for mining and, therefore, paid Boston no royalty. Boston sued the Austin Road Company for heavy damages and alleged the latter brought on the premises heavy equipment and commenced operations that permanetly damaged the land; that they brought in bulldozers, graders, tractors, road building and rock crushing equipment; that they pushed and tore down trees and graded roads; that the roads were graded without consideration for the natural drainage; that they "cleared away" top soil, leaving bare rock exposed; and that large boulders were unearthed and left on the surface.

It is interesting to observe that the lower court held the Austin Road Company liable in several thousand dollars damages to Boston, but the higher court reversed the verdict.

Are YOU READY

for big highway building program?

The required tonnage of aggregates will be enormous. Get ready to produce your share of it more economically.

Hundreds of Thomas Durable Dredge Pumps in service in all parts of the U. S. A. during the past eight years have been proving . . .

"YOU CANNOT BUY, AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL THAN A THOMAS—YOU CANNOT BUY ANOTHER PUMP THAT WILL MAKE YOU AS MUCH MONEY."

- ***Thomas pumps produce more material*—designed to be and really are much more efficient.**
- ***Thomas pumps last longer*—manufactured of durable, dependable, genuine, Thomas Ni-Hard metal.**

Get the facts. Write, phone or wire us for engineering data and cost estimates.

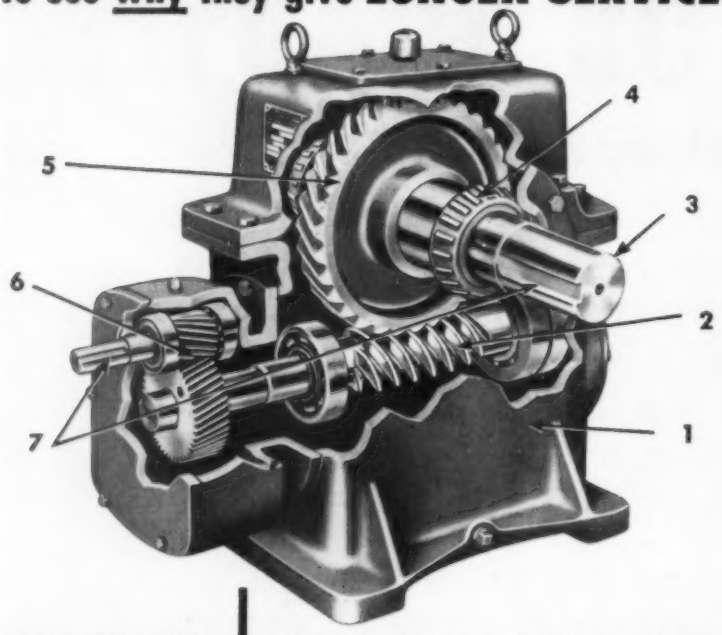
THOMAS FOUNDRIES, INC.

P. O. Box 1111 Birmingham, Alabama.

Look Inside a Foote Bros.

ENCLOSED WORM GEAR DRIVE

to see why they give LONGER SERVICE



1 EXTRA STRONG CAST HOUSING
Provides rigid mounting and alignment of caps and bearings. Made of high quality cast iron.

2 PRECISION ALLOY STEEL WORM
Integral with oversize shaft. Carefully matched to worm gear for quiet, trouble-free service.

3 OVERSIZE OUTPUT SHAFT

4 HEAVY DUTY, EXTRA LARGE BEARINGS
Oversize bearings used throughout unit. Worm bearings are combination single row radial and angular contact ball bearings. Input shaft bearings are single row radial type.

5 WORM GEAR
Precision generated from uniform density, high hardness virgin bronze alloy casting. High load carrying capacity.

6 HEAT TREATED HELICAL GEARS
Shaved for full tooth contact. Pinion integral with input shaft. Gear locked in position on worm shaft extension.

7 Just one of 10 different types, in a wide range of sizes, ratios and shaft arrangements.

One look at the oversize bearings, larger shafts, precision made gearing and the sturdy housing of a Foote Bros. Hygrade Worm Gear Drive tells you that *this* is a workhorse unit that will stand up and deliver under the toughest conditions.

Notice the carefully balanced design . . . greater mass where it's needed . . . the elimination of weight when it contributes nothing to efficiency . . . strength and toughness at the right places . . . the correct gear alloys . . . the compact design, and above all, the simplicity and ruggedness of this unit.

When you know the *inside* story of Foote Bros. Hygrade Worm Gear Drives, you can understand why they have built a reputation for quality, dependability, and performance that is unmatched by others.

Call in a Foote Bros. Field Engineer. Take advantage of our long experience in this business. Let us help you select or specify the most economical drive for your application.

Write for Engineering Manual HGB. It contains complete information on Hygrade Enclosed Worm Gear Drives.

this trademark stands for the finest industrial gearing made

T. M. REG. U. S. PAT. OFF

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
4571 South Western Boulevard Chicago 9, Illinois

The higher court said:

"There was no finding that any act of Austin constituted negligence. There was no finding that in doing the acts charged against it Austin used more of the land or did anything that was not necessary in properly conducting the operations authorized by the option and lease. Under the lease Austin was impliedly authorized to do everything reasonably necessary for mining rock. There is no finding that Austin did anything not reasonably necessary to mine rock. Austin had the right to use as much of the surface, and to use it in such manner, as was reasonably necessary to effectuate the purposes of the lease."

Law of Letters

A reader asked this question: "Sometime ago you wrote in PIT AND QUARRY something about how and when a court will decide that the person to whom a letter was mailed actually received it, although he swears under oath that he did not receive it. Please explain this law. Also, please explain to me whether a contract is made valid when a manufacturer explains to a purchaser that his order is received."

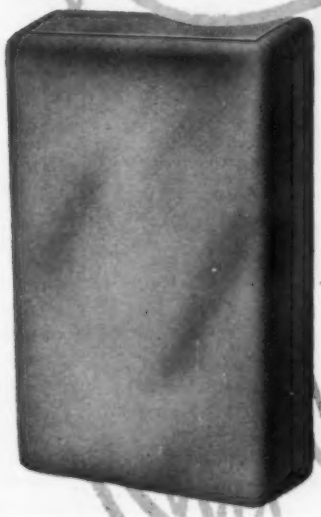
Broadly speaking, a valid contract must be made before any person is liable for payment of damages for a legal breach. In other words, a valid and enforceable contract is never made until one party submits an offer which the other party unconditionally accepts. Thus, an offer made in a letter by a seller must be accepted by the other party unequivocally; otherwise, no enforceable contract exists.

For example, in *Armour Insulating Company v. National Company*, 31 S. E. (2d) 880, the testimony showed that one Wills wrote a letter which the addressee received but he made no comment other than "Your order is 'under consideration.'"

In a subsequent suit the higher court explained that a mere "acknowledgement" of a letter by an addressee does not make a valid contract, and either party may without any liability refuse to fulfill its terms.

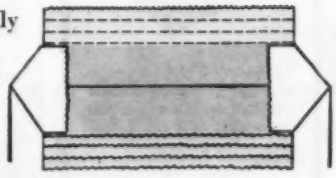
Therefore, it is quite apparent that a contract never is completed until a purchaser who receives an "offer" unconditionally "accepts" it. In the event, for example, a person who wrote a letter and agreed to pay for certain merchandise changes his mind and decides to cancel the order, he may do so provided he mails a letter of cancellation before the seller mails a letter of uncon-

HUDSON Ply-weld MULTIWALLS



tough at both ends

Extra strength where you need it most. That's Hudson's new PLY-WELD . . . the latest improvement in stepped end Multiwalls. Takes a beating without breaking . . . handles more easily at the spout, speeds production. Let us show you. Write Dept. 64



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ditional acceptance. But the law with respect to telegrams is different.

For illustration, in one case a manufacturer mailed a letter of acceptance on August 5 at 2 p.m. The purchaser dispatched a telegram August 5 at 1 p.m., one hour before the seller mailed his letter. In this case the higher court held that a valid contract was completed because: If a letter is mailed before a telegram is received, the letter takes precedent over the telegram. Thus, a telegram of acceptance will not make a valid contract although it is dispatched, for example, at California to New York, and received by the addressee in the latter state three days before the party in New York mailed a countermanding letter. A simple explanation is: If you mail a letter before you receive a telegram, the letter has precedent.

All higher courts hold that the addressee actually received a letter if the sender proves that the letter was properly addressed, and mailed in a United States mail box or Post Office.

Law of Contracts

Another reader asked this question: "What is the legal difference and responsibility of a manufacturer or seller in a written contract and an oral contract?"

There are only two important classifications of contracts: namely, written and verbal. It is important, however, to know that certain kinds of contracts are not valid unless in writing. For example, a contract relating to the sale of real estate, to long term lease of real property, and contracts for the sale of certain kinds of chattels must be in writing; otherwise, the contract is void. Moreover, a contract is void by which a person verbally guarantees to pay the account of another. In almost all states all contracts for the purchase of merchandise valued at $500 or more must be in writing.

The contents of a written letter or contract speaks for itself, but the obligations under an oral or verbal agreement must be proved to the court by clear testimony. Therefore, it is apparent that litigations involving written agreements are less expensive and more quickly settled, when compared with suits involving verbal contracts which require a great deal of testimony. Readers should realize that the outcome of suits involving verbal contracts always is uncertain because it is impossible to anticipate the testimony which will be given by the various witnesses. For these reasons it is advisable that all buyers and sellers refrain from making oral agreements.

Claim for Compensation

A reader asked this question: "Our state laws provide that an employee must file his application for compensation, under the State Workmen's Compensation Act, within 2 years from date of his disease. What date does this mean if the employee continues to work after he is disabled by the disease silicosis?"

All states have laws which require employees to file claims for compensation within a definite period after the last exposure to the disease of silicosis. A recent court held that the "last date of exposure" is the last day of his employment.

For instance, in *Square D. Company v. O'Neal,* 66 N. E. (2d) 898, the testimony proved that an employee seeking compensation for disability due to the occupational disease of silicosis had been in continuous employ of his employer for several years, when he became temporarily disabled because of the disease. Thereafter he resumed work until November 1, when he ceased work entirely.

In holding the last date of exposure to be November 1, and that the employee was entitled to com-

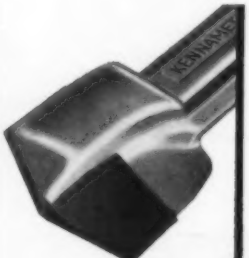
KENNAMETAL* Carbide Bits

stay sharp longer ...reduce costs

Kennametal produces the world's most extensive line of carbide-tipped mining bits and accessories, engineered and designed for economical service in any drilling condition. Tough Kennametal tips stay sharp longer, take harder knocks than any other tungsten carbide. Kennametal representatives—all men with years of actual mining experience—will recommend the right bit for the job and demonstrate proper application, in the mine.

Kennametal Drill Bits are available in more than 20 tip and shank designs for low-cost drilling in coal, clay, slate, shale, soda ash and similar formations.

Short, sturdy prongs enable the Kennametal RD Bit to drill harder and tougher material than is possible with standard two-prong bit designs.



Kennametal FDH bits, with their large solid carbide blades, drill the hardest formations that can be rotary drilled.

Look for the name of your Kennametal representative in the yellow section of your phone book, or on the back of your Kennametal Price Book—or, write direct to KENNAMETAL INC., Mining Tool Division, Bedford, Pa.

*Trademark

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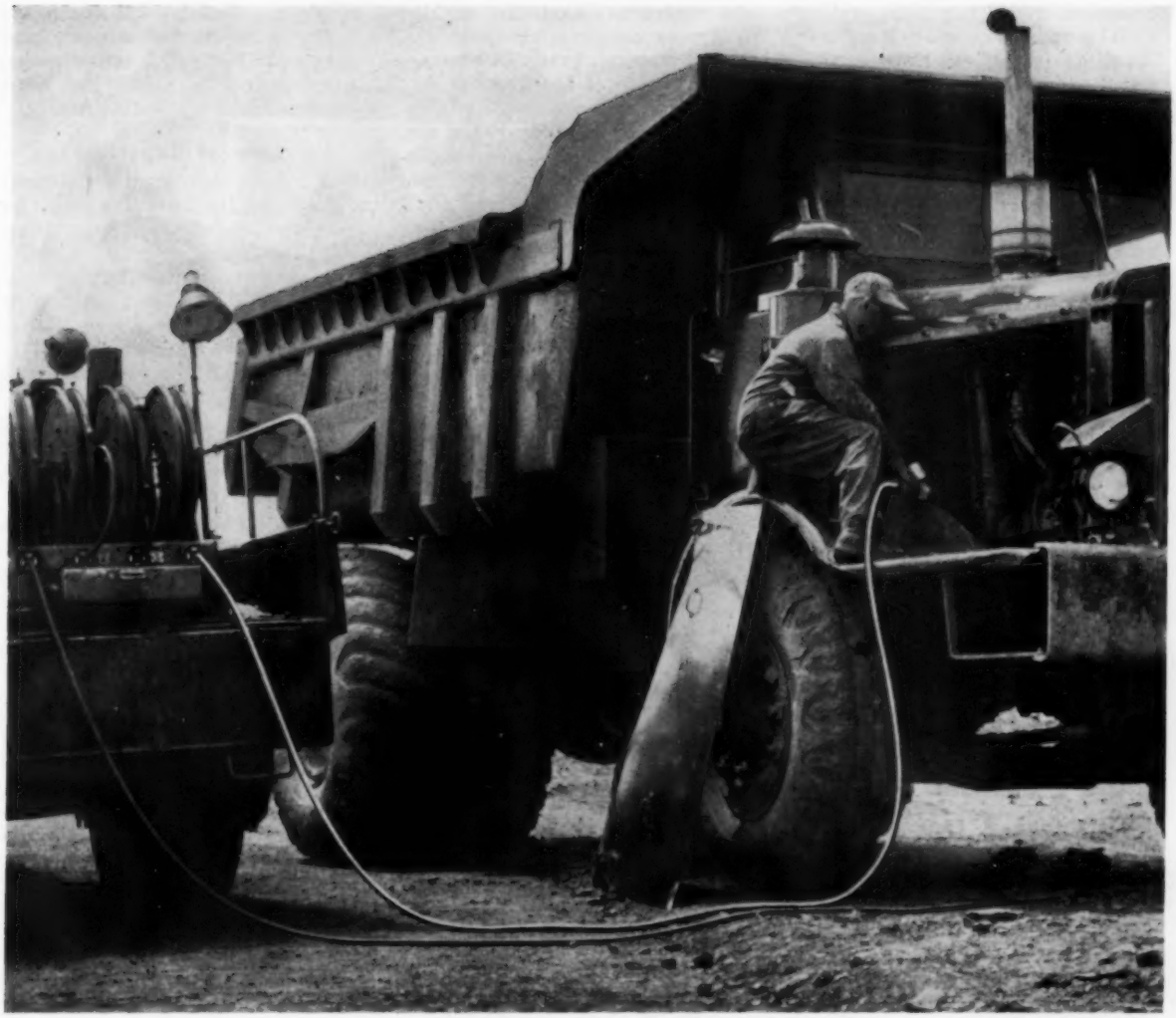
INDUSTRY AND KENNAMETAL ...Partners in Progress



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Keep out power-robbing deposits in your heavy duty Diesels. Refill with Sinclair SUPER TENOL® for the tough jobs! It helps to eliminate deposits of carbon, varnish and sludge that impair engine efficiency. SUPER TENOL is specially engineered to fight the effects of high temperature, engine over-load and continuous stop-and-go operation. Your engines last longer!

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SUPER TENOL MOTOR OIL

pensation, the higher court said:

"The findings expressly show that appellee's (employee's) disablement was the result of his exposure to the disease of silicosis during his continuous employment and that the disablement occurred on January 22, although he was able to do some work thereafter until November 1, when he was compelled to quit his employment as a result of the disease."

Date of Disability

According to a late higher court decision, dependents of an employee who contracts silicosis are entitled to recover compensation under the State Workmen's Compensation Act from the date of his disability.

For example, in *Thomas v. Continental,* 23 N. W. (2d) 191, it was disclosed that an employee was partially disabled on December 7 from pneumoconiosis contracted while sand blasting. He was removed from this job and given other work, and became totally disabled the following year on June 13, and died on April 14, as a result of the pneumoconiosis.

The higher court held that the employee's disability was due to the nature of his employment as a sand blaster and allowed compensation from June 13, under the State Workmen's Compensation Act.

Law of Copyright

A reader asked this question: "How can I obtain copyrights for our company on advertising literature, catalogues, etc.? Can I obtain a copyright without employing a lawyer? Are the laws relating to copyrights the same as laws relating to patent and trademark laws?"

The answer is that laws relating to copyrights differ entirely from patents and trademark laws. This reader may obtain a copyright himself although many persons employ experienced patent lawyers.

First, it is well to explain that obtaining a copyright does not present complications such as arise when prosecuting an application for a patent, trademark, or label registration. The owner of a copyright may write to the Registar of Copyrights, Library of Congress, Washington, D. C., explaining in simple words exactly what he desires to copyright, whether a booklet, descriptive or advertising circular, catalogue, book, or drawing. It is not necessary for him to explain or describe in detail the thing to be copyrighted. Soon a pamphlet and a blank form will be mailed to him from the copyright office. He can follow the simple directions given in this pamphlet, and fill in and mail the form with the usual fee. Without any written or verbal argument the copyright will be promptly mailed to him. This is so because the Registrar of Copyrights does not examine records to determine whether or not an applicant is entitled to a copyright. On the other hand, before a patent is allowed or a trademark is registered, the Patent Office officials carefully examine all records to determine whether it is new. Then complicated legal procedure and amendments usually must be filed before the application is approved.

JOHN A. HASH has succeeded GATES FERGUSON as advertising manager of The Celotex Corporation. Mr. Hash joined the Celotex advertising department in 1944 and has been assistant advertising manager for the last seven years. He will be succeeded by ROBERT M. JOHNSON.

Gates Ferguson will continue his association with The Celotex Corporation as advertising consultant.

3,600 tpd LAKESIDE STONE SCHEDULE

demands Brunner & Lay ROK-BIT's speed

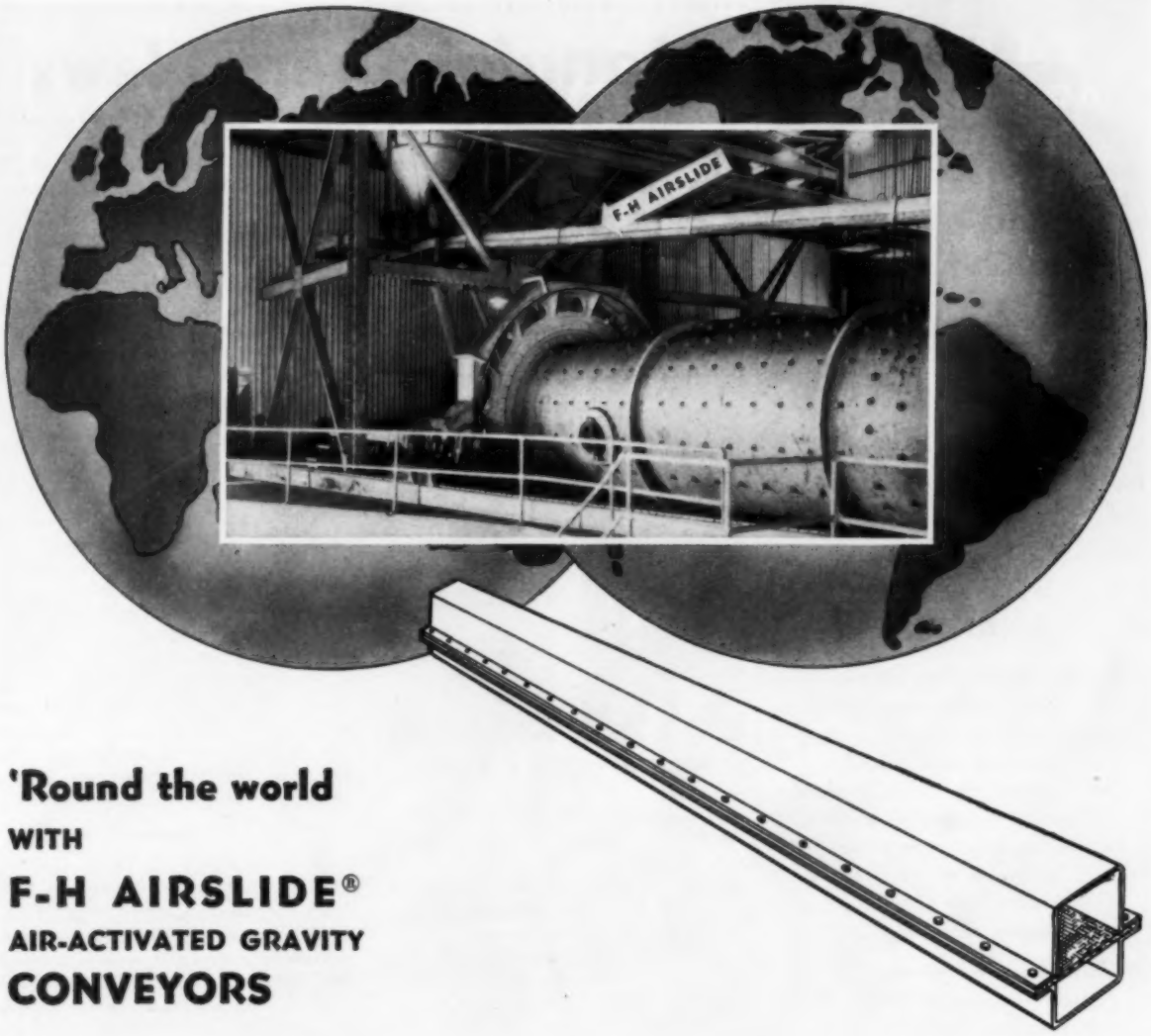
This highly mechanized crushed stone operation at Greenville, N. C. requires the best of fast drilling carbide bits. Brunner & Lay Rok-Bits are used 100%. 3½-in. blast holes are put down in granite in a 10- by 10-ft. pattern to 40 ft. depths.

Brunner & Lay Rok-Bits discharge more and larger chips, thru wider channels. Drill ROUND—easy-to-load blast holes. They work on new, uncut rock; not in their own cuttings. Fit directly on 600 series extension steel. See your distributor, or call our nearest plant.

Brunner & Lay carbide Rok-Bits are available in the 600 series (illustrated) and also in 400 series, 200 series and J-7.50 thread in sizes 4½ down thru 1½". Our larger Rok-Master bit in 6"X and Hole-Master in 6"X and 6½"X sizes. Details on complete line in catalog #756.

Brunner & Lay Products

Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. • Brunner & Lay Rock Bit of Philadelphia, Inc., 2514 East Cumberland St., Philadelphia 25, Pa. • Brunner & Lay of Los Angeles, Inc., 2425 East 37th St., Los Angeles 58, Calif. • Brunner & Lay, Inc., 150 Leslie St., Dallas, Texas • Brunner & Lay Rock Bit of Asheville, Inc., Sweeten Creek Rd., Asheville, N.C. • Brunner & Lay of Portland, Inc., 660 N. Tillamook St., Portland 12, Ore. Birmingham Rock Bit Co., Inc., 5-18th St., S.W., Birmingham, Ala.



'Round the world
WITH
F-H AIRSLIDE®
AIR-ACTIVATED GRAVITY
CONVEYORS

North, South, East, West, to the four corners of the earth, F-H Airslide® air-activated gravity conveyors are handling thousands of tons of many types of material, and, they're doing it at the very lowest cost per ton.

There are many good reasons for the universal acceptance of this conveyor. Simplicity of construction and installation. Comparatively light in weight, it can be suspended from overhead or placed on the floor. No moving or working parts, maintenance is nil. Nothing moves but the material and air. Benefits are constant and substantial.

Power—exceedingly low. Small fan or blower is sufficient to supply air at low pressure to fluidize the material being handled, which flows by gravity on a slightly inclined plane, the degree of slope depending upon the material conveyed.

Illustrated above is an Airslide installed in a cement plant in the Phillipine Islands, conveying oversize material (rejects) in the finish grinding mill circuit from separator to mill for further grinding. Airslide is 10" in width and 50' in length and handles 500 bbl. of finished cement tailings an hour. The only power required is a 2-hp. blower. Quiet, clean, efficient, low-cost conveying and, no moving parts to wear or get out of order.

The next time you are in need of conveying dry, fine materials, consult us. It may mean substantial savings you never thought possible.

Fuller
. . . . pioneers in harnessing AIR

FH-52
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Visit us in Booth 717 at the National Materials Handling Exposition, Philadelphia, April 29 to May 3.

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FULLER COMPANY
100 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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NEW ADJUSTABLE ELECTRIC VIBRATOR

NO WEIGHT CHANGING

A brand new silent electric vibrator that lets you vary the force of vibration without complicated weight changes, The Cleveland Vibrator Company now offers adjustable cams, permitting a change of vibrator force over a 3 to 1 range in a matter of seconds.

With this new bin vibrator you can adjust vibration to exactly fit your bins and type of material you are handling. No problem when you use a bin for different materials; just change the weights a notch. It's absolutely silent too.

Write for detailed information.

Air or Electric
Portable or Permanent
Silent or Standard

2710 CLINTON AVENUE • CLEVELAND 13, OHIO

Manufacturers' News

Appointment of K. E. KIESS as works manager, Gar Wood Industries' Findlay Division in Findlay, Ohio, has been announced. He has been associated with Gar Wood since 1948.

As works manager, Mr. Kiess will supervise and coordinate all manufacturing operations at Gar Wood's Findlay plant. Manufacturing operations here include the production of Gar Wood truck cranes, power shovels, Gar Wood-Buckeye ditchers, tractor and road building equipment.

K. E. Kiess

H. G. Hart

Harbison-Walker Refractories Co., Pittsburgh, Penn., has announced the appointment of HOWARD G. HART as St. Louis district sales manager. He had been manager of the specialties sales department.

Mr. Hart joined Harbison-Walker as foreman in the Portsmouth, Ohio works in 1929. He became superintendent of that works in 1934 and later was named superintendent of the Portsmouth district. He has been in the company's sales department since 1947.

Promotion of R. H. AYERS to the position of sales manager of the Paper Bag Division of Chase Bag Company, Chicago, Ill., and of ROY H. PLOEGER to manager of the Toledo Sales Division, has been announced.

Mr. Ayers, who for the past several years has been manager of the Toledo Sales Division, will make his headquarters in New York where the company operates the Paper Bag Division.

Mr. Ploeger joined the sales department of Chase in 1934 and for the past sixteen years has been located in the Toledo branch. In his new capacity as manager of the Toledo Sales Division, he will supervise sales activities in the Ohio, Michigan and Indiana territories.

W. S. Lowe, president of the A. P. Green Fire Brick Company, Mexico, Mo., and R. H. Remmey, president of the Richard C. Remmey Son Co., Philadelphia, Penn., announce the acquisition of the Remmey Company by the Green Company. The Remmey Company devotes most of its production to the manufacture of special refractories, high temperature bonding mortar, and high alumina refractories produced from silicon carbide, mullite, zircon, and bauxite raw materials. Some fire-clay brick are also manufactured at the plant.

Remmey is now a wholly owned subsidiary of A. P. Green and will operate as a separate corporation with John G. Remmey as vice-president and general manager. Robert H. Remmey, who was president, will remain with the firm as consultant. G. Brickley Remmey will be in charge of research, development, and engineering, and Francis G. Remmey will be in charge of operations. The name of the firm will remain unchanged.

A new president, HERSCHEL G. HARRIS, has been elected at New York Rubber Corp., New York, N. Y., to succeed Mark H. Stratton, president since 1932, who is retiring. Mr. Harris was formerly vice-president in charge of sales of the *Airubber* division, and has been with the company since 1937.

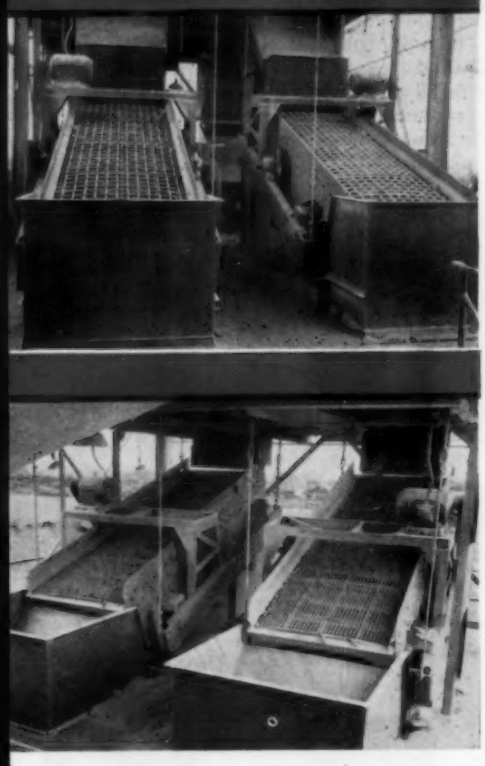
H. G. Harris

C. B. Allen

C. BRADLEY ALLEN, formerly vice-president in charge of sales of the mechanical rubber goods division, who joined the company in 1932, has been elected executive vice-president and a director.

New York Rubber Corp. specializes in the design and manufacture of rubber conveyor belts and power transmission belting.

New slag plant handling GIANT FAIRLESS output



Photographed on-the-job, Morrisville, Pa.

Here is a SECO salute to another modern, efficient materials screening plant. Put into operation in April 1956, this superbly engineered plant, owned and operated by the Warner Company, is designed to handle the entire blast furnace slag output of U. S. Steel's giant new Fairless plant at Morrisville, Pennsylvania.

Six SECO vibrating screens are on the job here assigned to secondary and final sizing. The plant has the capacity of approximately 300 T.P.H. and is currently producing 2200-2600 T.P.D.

Whether you have a large plant or a small one, it will pay you to go SECO. Seco builds over 350 models of screens for all types of materials screening from Ag-Lime to Rip-Rap.

SEND FOR SECO CATALOG #204 TODAY

SECO
TRUE CIRCULAR ACTION
VIBRATING SCREENS

Whether You Need One Screen or Twenty!

We invite you to put your screening problems in the hands of SECO screening specialists. You'll be sure to get the right screen or screens for the job and the extra benefits of SECO proven trouble-free performance and long life. Write, wire or phone.

SCREEN EQUIPMENT CO., INC.
Buffalo 25, New York

DALE BENNITT, partner in Bee & Dee, La Porte, Ind., contractors, was the winner of the Williams Bucket displayed at the ARBA Road Show, it was announced by John J. McGlone, vice-president of The Wellman Engineering Co., Cleveland, Ohio, and general manager of its Williams Bucket Division.

Harnischfeger Corp., Milwaukee, Wis., has announced the appointment of ROBERT LOSSE as director of industrial relations and personnel. He will make his headquarters in Milwaukee and will be responsible for all personnel activities among the production, engineering, sales and administrative employees for all plants.

Mr. Losse has been with Harnischfeger continuously since 1937. Starting as an industrial engineer, he has served as assistant works manager, personnel manager of the P&H West Milwaukee Plant and general manager of Harnischfeger's Escanaba, Michigan plant.

Succeeding Mr. Losse as general manager of Harnischfeger's Escanaba operations will be PAUL DIEFENDERFER who for the past three years has been manager of Los Angeles shop and service operations.

The Available Truck Co., Chicago, Ill., one of the oldest manufacturers of trucks, has been purchased by Crane Carriers Corp., Tulsa, Okla.

The Available Truck Co. will be operated as a division of Crane Carrier Corp. Acquisition of the Chicago concern is expected to boost CCC's 1957 annual sales to about double the 1956 total. The Crane Carrier Corp., Tulsa plant now operates two assembly lines producing more than 100 trucks each month.

Crane Carrier Corp. is a subsidiary of Standard Industries, Inc. of Pennsylvania, which owns several other companies, including Sieberling Latex and Watson Elevator Co. Its acquisition by Standard Industries occurred a year ago.

ARTHUR J. STURWOLD has been named a district sales manager for Four Wheel Drive Auto Co., Clintonville, Wisc., in Illinois, Michigan, northern Indiana, and eastern Missouri.

He has been with FWD since 1955 as a transport sales representative in Illinois. His previous experience includes positions as truck salesman, fleet superintendent, and service engineer.

JOSEPH F. JOY, 73, founder of the Joy Manufacturing Co., died at his home in Ft. Pierce, Fla. recently. He had suffered a heart ailment for several years.

Mr. Joy's name was synonymous with mechanized mining equipment. He invented the first coal loading machine which he patented in 1916. This was the forerunner of all sorts of mining equipment later to be invented by Mr. Joy, whose introduction to coal mining was at the age of 15. His coal loader was first marketed in 1922. It marked the first application of mechanized loading in the bituminous coal mines of the United States. In all, he owned hundreds of patents in the United States and foreign countries, and his major inventions included conveyors, blasting devices, locomotives, drills, stopers, cutters, tractor mechanisms, pumps, hydraulic jacks, hoisting mechanisms, tunneling machines and motors.

Iowa Manufacturing Co., Cedar Rapids, Iowa, announces the appointment of FLOYD JONES as district sales representative for the *Cedarapids* line of aggregate producing and bituminous paving and mixing equipment. His territory will include the Southeastern states, with headquarters in Atlanta, Ga. Mr. Jones began his career in the sales end of the business. He has served as district representative in the Southeast territory for the Davey Compressor Company; and for both crushing and bituminous manufacturing companies.

Fruehauf Trailer Co., Detroit, Mich., has announced the resignation of FREDERICK E. BURNHAM as executive vice-president — finance. He will continue to serve as a consultant to the company.

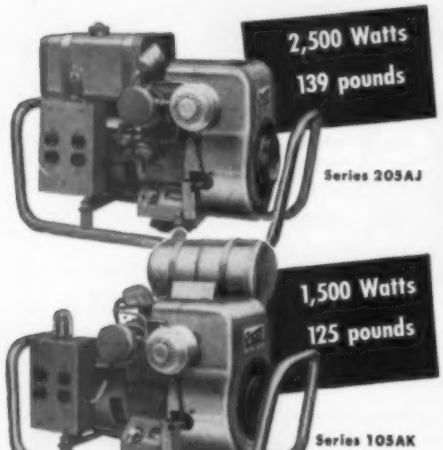
Pioneer Engineering, Division of Poor & Company, Inc., Minneapolis, Minn., announces the Flack Equipment Co., 1240 McCook Ave., Dayton, Ohio, has been newly appointed as distributor of Pioneer equipment in southwestern Ohio.

Officers of Flack include: D. L. Schumacher, president and treasurer; C. A. McCune, vice-president and sales and advertising manager; Mrs. E. F. Hornbeck, secretary; and G. L. Brown, assistant secretary and assistant treasurer. W. E. Staymates is service manager and H. H. Hoefer, Jr. is parts manager. The Cincinnati branch, 2565 West Galbraith Road, is managed by George B. Kraft.

YOU GET *4-cycle* DEPENDABILITY

AND *Light weight* TOO . . . IN AN

ONAN Electric Plant



These power-packed electric plants give you all the *4-cycle* advantages of quick starting, long life and trouble-free operation . . . with an amazing weight saving over usual 4-cycle plants. You can carry them easily to any spot . . . and you can count on them delivering their full rated capacity as long as you need it. Both are single-cylinder, air-cooled . . . completely equipped and ready to go.

Other models to 75,000 watts.

Write for special folder on lightweight models!

D. W. ONAN & SONS INC.

Onan ELECTRIC PLANTS

3765 University Ave. S. E., Minneapolis 14, Minnesota

For today's closed-circuit grinding...
Rex-Rated Cement Mill Bucket Elevators

Send today for Bulletin 3304. It's the story of the new—the best—the first and only cement mill bucket elevator where you can look at carefully developed and proved selection tables and pick the right elevator to match the demand conditions of your mill operation.

The bucket elevator has long been popular in cement mills. Because of its vertical design, it takes a minimum of floor space.

Now—on the basis of today's field experience in a market which is demanding greater capacities, less down time and less horsepower dollar and maintenance per pound of lift, Rex Engineers have done the complete job. The Rex Elevators are new: the bearings—the chains—the sprockets—the buckets—the take-ups.

New parts are matched to new parts, and the whole is matched to today's problem of accelerated cement production. The new Rex-Rated Cement Mill Bucket Elevators will give you greater capacity and more reliable service than ever.

CHAIN BELT COMPANY
Milwaukee 1, Wisconsin

CHAIN Belt Company
4604 West Greenfield Avenue
Milwaukee 1, Wisconsin

Please send Bulletin 3304 on Rex Rated Cement Mill Bucket Elevators.

Name.....

Company.....

Address.....

City.....State.....

Gardner-Denver Co., Quincy, Ill., recently announced that J. W. GARDNER has been named coordinator—new products development. He will coordinate the work of all departments concerned with the development of new Gardner-Denver pumps, air compressors, rock drills, air tools and related equipment for the construction, mining, petroleum, transportation, manufacturing and process industries.

Mr. Gardner, who is a member of the board of directors, has been with Gardner-Denver since 1947, when he joined the sales force operating from the Los Angeles office. He was transferred to the executive office in Quincy during 1952, and has since served in various capacities in engineering and sales.

At the same time, O. C. KNAPHEIDE, JR., who has been sales manager of the oil field division for the past three years, was appointed assistant to the general sales manager. He has been with the company since 1934.

R. J. MARSHALL has been named sales manager of the oil field division in Quincy. Mr. Marshall joined the Gardner-Denver sales force in 1948, and has served as salesman, as manager of the Los Angeles district office, and, since 1955, as assistant to R. J. Bauer, manager of the Dallas oil field division.

DOUGLAS W. VERNON has been named product sales manager for wire rope and aircord by John A. Roebling's Sons Corp., Trenton, N. J. He was formerly vice-president and general manager of the Leschen Wire Rope Division of the Watson Stillman Co. Prior to joining the Leschen organization in 1945, he had been employed by Roebling for more than twenty-three years.

EARL A. FRAZIER has been appointed New York district sales manager for the Wire Rope and Aircord Division. He will have his headquarters in New York and will be in charge of the division's sales activities covering New York, northern New Jersey, and New England.

OSBORNE W. TRAYLOR has been appointed Houston district sales engineer for the Construction Materials Division. This newly created post was made necessary by the tremendous interest in Roebling's wire, strand and fittings for tensioning of prestressed concrete. His territory will include Texas, Oklahoma, Mississippi, Louisiana, Arkansas and western Tennessee.

Wisconsin Motor Corp., Milwaukee, Wisc., announces the appointment of two new vice-presidents, confirming action of the board of directors. They are F. BURROWS ESTY, chief engineer, and RAY J. FELLOWS, sales manager.

Mr. Esty has been with the engine firm since 1948, joining as asst. chief engineer and succeeding to the post of chief engineer in 1955, upon the retirement of his predecessor, A. F. Milbrath.

F. B. Esty

R. J. Fellows

Mr. Fellows joined Wisconsin Motor in 1938 as a salesman, contacting major original equipment customers and distributors. In 1948 he was promoted to asst. sales manager and subsequently was appointed domestic sales manager. A post he has held since 1954 and which he continues to occupy as vice-president.

Dorr-Oliver Inc., Stamford, Conn., announces the appointment of new directors of two major Technical Divisions. GLEN G. REED, former manager of sales services, has been named director of filtration Technical Division and GLENN O. WILSON, former industrial sales manager, has become director of the Industrial Technical Division.

In their new posts, Messrs. Reed and Wilson are responsible for the design, engineering and product development of all D-O equipment in their respective fields. Mr. Reed joined the company in 1947. Mr. Wilson, a member of the D-O staff since 1937, succeeds the late William B. Gery who died recently.

Basic Incorporated, Cleveland, Ohio, announced recently the appointment of DAVID M. FLYNN to the company's sales and service staff. Mr. Flynn, located in the Cleveland office, will work on service assignments in all three sales districts.

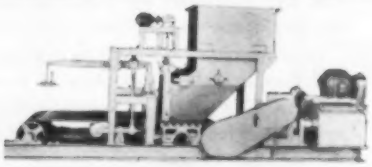
Like other of Basic's sales and service personnel, Mr. Flynn has a background of experience in the steel industry. Prior to joining the company he was associated with U. S. Steel's Gary Works.

SCHAFFER POIDOMETERS

"Standard Scales Everywhere"

for superior performance in

WEIGHING • BLENDING • RECORDING
FEEDING • MIXING • PROPORTIONING



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CAPITALIZE on the proved, all 'round scaling ability of fast, automatic, accurate SCHAFFER Poidometers.

Bulk material handlers throughout the world employ these units to provide *dependable* weight-answers at various processing stages.

Ease of installation—long-term serviceability—highly economical operation—are features that identify Poidometers as *standout* weighing machines.

Available with remote controls for showing and changing feed rate, and total weight recorders.

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SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

INDUSTRIAL SCREENS

for accurate, low-cost screening

You can get a CF&I Industrial Screen that has exactly the right combination of features to assure fast, accurate, low-cost service in your screening operation. That's because CF&I Screens are available in standard and special weaves . . . and can be supplied in a wide variety of carbon and alloy steels, as well as in non-ferrous metals.

It's extremely simple to get the complete story on how CF&I Industrial Screens can be used to improve your screening operation—just contact your nearby CF&I representative. No obligation on your part, of course.

SPACE SCREENS

THE COLORADO FUEL AND IRON CORPORATION

3676

THE COLORADO FUEL AND IRON CORPORATION: Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso • Ft. Worth • Houston
Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Wichita
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TORTURE-TESTED

BY

ROCK AND SAND

:VIBRATION:
:HOT BEARINGS:
:HEAVY SHOCK-LOAD:

Yes — These are the day-to-day tortures of lubricants in the rock and sand business — and they have to be *rugged* in order to "take it."

LE

1020

HIGH TEMPERATURE LUBRICANT

Keeps Your Equipment On The Job!

Where other lubricants fail — you'll find that LE #1020 will "stay put" in shovel, crusher, conveyor, and similar bearings. The reason for better performance is because #1020 is *engineered* for the toughest kind of lubricating applications. This means more profitable production with minimum maintenance expenses.

It Pays To Use The Best!

For further information on this or other LE engineered lubricants, write, wire or phone.

LUBRICATION ENGINEERS, INC.

FORT WORTH, TEXAS

INDUSTRIAL LUBRICANTS FOR INDUSTRIAL EQUIPMENT

Mobile Drilling, Inc., Indianapolis drilling equipment manufacturer, has purchased the Buda Earth Drill Division of Allis-Chalmers Manufacturing Co.

With the addition of this earth drilling division line, the Indianapolis firm now ranks among the world's largest manufacturers of portable drilling equipment and drilling accessories.

News of the company's expansion came from GEORGE E. DICKINSON, founder and president, who organized the firm in 1946. A mining entrepreneur and owner of the Tennessee Valley Collieries, he began experimenting in the design of portable drilling equipment for use in his own mines. His efforts were so successful that other mine operators started requesting similar equipment, and Mobile Drilling, Inc. was organized to meet the demand.

G. E. Dickinson

W. T. Ahlborg

WILLIAM T. AHLBORG, who joined Denver Equipment Co., Denver, Colo., in 1938, and was previously vice-president and secretary, has been appointed executive vice-president and general manager.

Mr. Ahlborg named F. J. Griesemer, formerly in charge of DECO manufacturing facilities, as assistant general manager. Douglas E. Newton, general sales manager, will assume additional responsibilities in administration of the company's international manufacturing and sales organization.

Incorporation of a new subsidiary to conduct the foreign business of The Goodyear Tire & Rubber Co., Akron, Ohio, has been announced. It is incorporated as The Goodyear International Corp. and replaces The Goodyear Tire & Rubber Export Co.

F. T. MAGENNIS has been named president of the International subsidiary, with E. E. LONG as vice-president. Mr. Magennis had previously held the title of vice-president and general manager of the export company. He is a veteran of nearly 40 years' service with Goodyear.

Charles P. Orr, president, and Miles Powell, vice-president, have announced the approval of the new company name, Spray Products Corp., Camden, N. J., changed from Spray Starting Fluid Co.

The change reflects the company's expansion into other lines of manufacture and marketing beyond their basic product, Spray Starting Fluid, well known and well established in the automotive and industrial fields.

Fred W. Parker, Jr., executive vice-president, Timken-Detroit Axle Division, Rockwell Spring and Axle Co., Detroit, Mich., announces the appointment of N. R. BROWNYER, vice-president, as director of engineering of the Axle Division. Mr. Brownyer will be responsible for the conduct of central design operations, service engineering and coordination of all division engineering activities.

The appointment of D. H. BRIGGS as service manager of GM's Detroit Diesel Engine Division, Detroit, Mich., has been announced. He joined General Motors in 1935 and was engaged in experimental work on Detroie Diesel models for several years before production started. He was one of the original Detroit Diesel employes when the Division was organized in 1937.

B. W. PATRICK, former zone sales manager in New York, succeeds Mr. Briggs as assistant service manager.

MARTIN L. RITTER, manager of sales for the Farrell-Cheek Steel Co., Sandusky, Ohio, died recently following a brief illness. Mr. Ritter, widely known in metal working and industrial fields, had worked with the firm in a sales capacity for over 40 years.

Pangborn Corporation, Hagerstown, Md., manufacturers of blast cleaning and dust control equipment, announce the promotion of ARTHUR J. BUCKLEY as general sales manager from his former position of sales manager. He joined Pangborn in 1952 as assistant sales manager and was elevated to sales manager in 1955.

Brunner & Lay, Inc., Franklin Park, Ill. have opened a new plant in Denver, Colo. at 2 Santa Fe Drive where a complete stock of the following tools will be available—carbide Rok-Bits, Intra-Set and conventional drill steels, bit couplings, adapters, extension steel, and pneumatic tool accessories.

Right: John Deere Crawler-Loader working in marl (half earth and half rock). Outfit owned by Fred W. Woody, Rt. 2, Smyrna, Georgia, and operated by Carl Everett.

Owners Agree...

You Can't Beat a JOHN DEERE for Holding Costs Down

FRED WOODY, SMYRNA, GEORGIA, SAYS:

"I like the John Deere because of its low initial cost and because I find it is very inexpensive to operate. It performs nicely, is fast-loading, and works well in close places. It has an extra-good, strong, fast lift. The general-purpose bucket raises plenty high for all ordinary trucks. It just can't be beat for its size!"

DOING THE JOB EFFICIENTLY . . . on time . . . has been a John Deere tradition for nearly 120 years.

But the feature of modern John Deere mobile work units that always brings a smile of satisfaction to the owner is the real, measurable, dollars-and-cents savings he makes in initial cost, operating cost, and maintenance.

Mr. Fred Woody, service station operator and contractor, not only finds that the dealer's claims for his new crawler-loader's operating costs are all true, but he is outspoken in his satisfaction with the outfit's all-around performance.

He agrees with thousands of John Deere Crawler owners the country over: "It just can't be beat for its size."

★ ★ ★

These are money-making days for the man with the right equipment. Be sure you have the full story on the John Deere Crawler, the tractor that has made more friends in a shorter time than any other tractor on the market. Look in your phone book classified section for the name of your nearest John Deere industrial dealer.

JOHN DEERE Industrial Tractors and Equipment

Backed by nearly 40 years of tractor manufacture for dependable service and quality.

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Moline, Ill. • Dept. D58C

Please send me your latest literature on the John Deere Crawler and Equipment.

Name_____

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Use REMA to add years of life to your Belts

REMA is the New and Amazing Self-Vulcanizing Rubber Repair Material

REMA
REQUIRES
- NO HEAT
- NO HEAVY EQUIPMENT
- NO CURING TIME DELAY

• REMA is not just another cold patch. REMA is vulcanization by chemical process. The repaired area is sealed with an abrasive resistant cover stock patch. No heat or heavy vulcanizing equipment required. Here's the astonishing advantage—*when repair work is completed belts may be returned to service immediately.*

• REMA seals out moisture, reduces mildew, rot and deterioration — the great enemies of conveyor belts. Your own maintenance man can quickly repair your belt — it doesn't take a skilled belt mechanic to use REMA.

• Used for repair of all types of damaged spots, edge wear and for covering metallic joints. Available in introductory kits or parts separately.

Order from your Flexco-Alligator distributor

Write for Folder No. R4

FLEXIBLE STEEL LACING CO.
4623 Lexington St., Chicago 44, Ill.

REMA SELF-VULCANIZING
RUBBER REPAIR MATERIALS

Establishment of an industrial division manager as a separate position in the company's expansion program and the appointment of WILLIAM J. LAUGHLIN, Los Angeles branch manager, to fill the new office, has been announced by Thor Power Tool Co., Chicago, Ill.

Mr. Laughlin, Los Angeles manager since 1953, is being transferred immediately to the company's new executive offices in Chicago to supervise all Thor industrial air and high frequency electric tool sales throughout the company's domestic and export branches.

Other appointments announced are: Clarence H. Gabriel, Denver manager, named to succeed Mr. Laughlin as Los Angeles manager. Mark A. Sorenson, Philadelphia manager, transferred to Denver to succeed Mr. Gabriel. John L. MacDonald, Newark manager, transferred to Philadelphia to succeed Mr. Sorenson. Albert C. Cheswick, Houston service engineer, promoted to branch manager to succeed Mr. MacDonald in Newark.

W. J. Laughlin

R. D. McWhorter

ROBERT D. MCWHORTER has been made sales representative for the Mexico Refractories Co. in Birmingham, Ala. He has lived in Birmingham for the past twenty-eight years and is well known in industry in this section, having represented the Pittsburgh Plate Glass Co. before going into the refractory field.

The Day Sales Co., with offices in Minneapolis, Minn., has been organized as a subsidiary of The Day Co. to engineer and install complete dust control and bulk material handling systems and sell, throughout the United States, industrial equipment manufactured by The Day Co.

Officers of the new company are: M. R. Springer, president; R. I. Marquardt and A. E. Swanson, vice-presidents; and C. W. Mayfield, secretary-treasurer. The company is staffed by former employees of The Day Company who previously handled the engineering and sales functions for that company.

The Thew Shovel Co., Lorain, Ohio, manufacturers of Lorain power shovels and cranes, has established a new research and development department. SPENCER BOWMAN, as manager of research and development, will head up the department

Mr. Bowman joins Thew with an extensive background in this field, having served for four years as manager of machinery research and development with Westinghouse Air Braks Co. and for four years as assistant director of development for Bituminous Coal Research, Inc.

Ramset Fastening System, Cleveland, Ohio, a part of Olin Mathieson Chemical Corp., has created four new regional sales managers' posts.

DALE CHAMPLIN, with headquarters in Philadelphia, will head sales on the Eastern seaboard. R. W. MULLIS will handle Southern sales, with headquarters in Charlotte, N. C. K. E. VAN SCOY, with headquarters in Kansas City, will be responsible for the Middle West. SAMUEL WINTERS, operating from San Francisco, will handle Western sales. All were formerly district sales managers.

Formation of Research-Cottrell (Canada) Limited has been announced. Offices of the new company are located at 33 Bloor Street East, Toronto, Ontario.

Research-Cottrell (Canada) Ltd. is a subsidiary of Research-Cottrell Inc., Bound Brook, N. J., which, with Research Corporation, since 1912 has been producing industrial gas cleaning equipment for a large number of applications in Canada and the United States. Among these are power, steel, and chemical plants, cement and paper mills, smelters, and refineries.

Appointment of HOWARD MARRIOTT as eastern regional sales manager of Galion Allsteel Body Co., Galion, Ohio, is announced.

In his new post, Mr. Marriott will coordinate the sale of Galion Allsteel dump bodies, hoists and hydraulic tailgates in his territory.

REGINALD L. JOHNSON of Riverdale, N. Y., has been elected vice-president of Johns-Manville Sales Corp., New York, N. Y.

In his new post he will head up all Johns-Manville advertising and sales promotion activities as sales promotion manager, succeeding H. M. Shackelford of Pound Ridge, N. Y., who has retired after nearly 30 years' service.

"We're blasting near you"

Now you can gain better public relations in communities where you are blasting by showing an interesting, informative film, in color!

It works, too. The film, entitled, "*We're Blasting Near You*" has already been shown by contractors and quarry operators in many parts of the country, to audiences including PTA groups, civic organizations and service clubs.

The movie tells why blasting is necessary, and explains the steps you are taking to "be a good neighbor." It shows how millisecond delay techniques eliminate the old-fashioned, jarring explosions of the past, and how modern blasting methods keep noise, vibration and flying rock to a minimum.

This unique film is accompanied by a kit of suggested news releases, sample speeches, safety posters and other helpful material—everything you need to conduct a successful meeting in your community. Plan now to get the important public relations benefits from showing "*We're Blasting Near You.*" Write, telling us the approximate dates you'd like to schedule it.

Technical Customer Service Section

ATLAS POWDER COMPANY

WILMINGTON 99, DELAWARE

offices in principal cities

"Make Mine Safety," a new 16 mm sound-color film demonstrating the use of rock bolts in various mine applications, has been made available by The Colorado Fuel and Iron Corp., Denver, Colo. The new film shows the installation and advantages of rock bolts at three representative mines, and also shows the actual production of rock bolts at the Pueblo, Colo., plant.

"Make Mine Safety" was produced with the cooperation of the Anaconda Co., Climax Molybdenum Co., Intermountain Chemical Co. and the United States Bureau of Mines in the interest of giving the mining industry a graphic picture of the theory and application of rock bolting. The film is presented in such a manner as to be of interest to the man underground as well as to the mining engineer.

Copies of the film are available upon request to The Colorado Fuel and Iron Corp. in Denver, or to any of the regional sales offices.

Diamond Iron Works Div. of Goodman Manufacturing Co., Chicago, Ill., has made the following two distributor appointments:

State Machinery and Supply Co., Inc., of West Columbia, S. C., as distributor for South Carolina.

Western Machinery Co., Denver, Colo., as distributor in Colorado and Wyoming.

THE KEY TO SUCCESSFUL SCREENING

ALL NEW IN DESIGN

WRITE FOR NEW BROCHURE

HANCO ELECTRIC SCREEN HEATERS

eliminate "blinding" and "clogging" of wire screens, thus making beating and brushing practices obsolete. Designed for heavy-duty service, HANCO Heaters with Quick Change Attachments are quickly installed and easily adapted to new or existing screen installations with such features as large capacity secondary terminal, a 16 step temperature changer, dust enclosure compact, exclusive overload protector.

EXCLUSIVE SCREEN TENSIONING DEVICE
(Replaces Existing Parts)

Fiberglass plate — insulates conductor from frame — eliminates draw bolt insulators.

Wedge-shaped conductor bars offers positive contact with cloth.

Representatives throughout the World.

Hanco

F. R. HANNON & SONS

1605 Waynesburg Rd. S.E., Canton 7, Ohio
ENGINEERS — Since 1926 — MANUFACTURERS

LT. GEN. BRYANT L. BOATNER, U. S. Air Force, retired, has been named administrator of engineering for Eaton Manufacturing Co., Cleveland, Ohio.

General Boatner joined Eaton Manufacturing in 1955 upon his retirement from the service to counsel and advise in the area of general aircraft affairs. Eaton is one of the producers of jet engine blades and other aircraft components.

A West Point graduate, class of 1928, General Boatner was a career airman in the U. S. Air Force. His service included tactical assignments in fighter types of airplanes, commanding officer of the European Wing of the Air Transport Command with headquarters in Paris, Commander of the Air Force Proving Ground at Eglin Air Force Base in Florida, and Deputy Chief of Staff for Materiel, his last assignment prior to retirement.

Lt. Gen. Boatner

N. M. McGrane

Western Precipitation Corp., Los Angeles, Calif., has appointed NORMAN M. MCGRANE as vice-president.

Mr. McGrane has been with Western Precipitation for more than 30 years. Most recently he has served as chief technical engineer for Cottrell, Multiclone, CMP and Dualaire lines and is widely experienced in company operations and policies. In his new duties, he will act as staff advisor to the executive vice president, Alfred W. Knight, on all technical and engineering matters.

JOHN B. JOHNSON, a vice-president and member of the board of Hercules Powder Co., Wilmington, Del., retired in March after forty-two years with the company. He spent most of his early career in various supervisory posts concerned with the production of commercial explosives and ammonia. His career broadened into other fields during these years when he was an executive in sales and purchasing for the company. He served in an executive capacity with the explosives department from 1940 until his election as a vice-president in 1953.

DODGE *Power Giants*

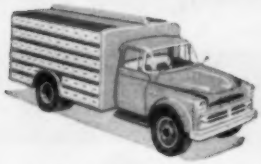
Dodge T700
Tandem

Dodge P300
Forward-Control

Dodge 600
with Van Body

Special bodies fit readily
on any Dodge chassis

Dodge 500
Stake



Dodge 400
with Beverage Body

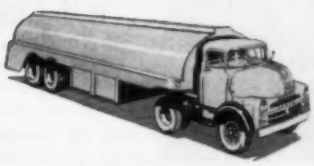
MOST *POWER* OF THE LOW-PRICED 3

. . . In every weight class

Dodge Power Giants give you an extra bonus of power.

From 204-hp. pick-ups to 232-hp. tandems, Dodge V-8's outpower the "other two" by as much as 31%. This extra power reduces engine strain, saves wear. What's more, Dodge engines, both V-8's and 6's deliver full power on regular gas.

Dodge hauls more payload, too . . . up to one-third more. And Dodge offers major advantages in driving ease, cab comfort and prestige-building good looks. See for yourself. Your Dodge dealer has a Power Giant to meet every trucking need.



Dodge C.O.E. 700
Tractor

Dodge 100
Panel

Collect Your Extra Dividends
April is Extra-Dividend Month

Get *extra dividends* in power, *extra dividends* in payload, *extra dividends* in performance . . . plus a special *extra-dividend* deal on a new Dodge *Power Giant*.

DODGE TRUCKS WITH THE *FORWARD* LOOK

TOM L. JONES has been appointed director of multiwall sales for Arkell and Smiths, New York, N. Y., manufacturers of multiwall shipping bags and small specialty bags.

Mr. Jones joined the 98-year-old paper bag manufacturing concern in 1946 as a salesman for the Ohio area and subsequently was appointed Central Division sales manager, and for the past year has been vice-president and Eastern Division sales manager with offices in New York.

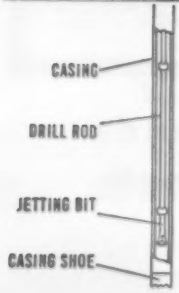
Arkell & Smiths is bringing to successful completion a modernization and expansion program at their multiwall bag-making plant at Wellsburg, W. Va. After laying new flooring, the flow of materials and sequence of operations were rearranged to give improved efficiency and increased production. A new paper warehouse was constructed, greatly increasing paper storage capacity.

ROBERT J. STEVENS has been named midwestern district manager of the Raymond Bag Corp., Middletown, Ohio, a division of Albermarle Paper Manufacturing Co. He comes to Raymond with a background of many years' experience in the multiwall paper bag field.

What's down there?

Empire
TEST DRILLS
come up with the
RIGHT ANSWERS

EMPIRE
Hydraulic
Testing
Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

Write TODAY for complete details

NEW YORK ENGINEERING CO. 75 WEST STREET NEW YORK 6, N. Y.

CLARENCE E. KILLEBREW was elected president of the Construction Industry Manufacturers Assn. at the organization's annual meeting held recently. Mr. Killebrew, vice-president, Clark Equipment Co., Construction Machinery Division, Benton Harbor, Mich., will serve a one-year term.

BOYD OBERLINK, vice-president, Allis-Chalmers Manufacturing Co., was elected first vice-president and HENRY BARNHART, vice-president, Baldwin-Lima-Hamilton Corp., was elected second vice-president.

The 237 member companies of the Construction Industry Manufacturers Association account for approximately 95 percent of the dollar volume of construction machinery manufactured in the United States.

C. E. Killebrew

M. Nielsen

M. NIELSEN, executive vice-president of The Babcock & Wilcox Co., New York, N. Y., has been elected a trustee of The Bank of New York, it has been announced by Albert C. Simmonds, Jr., president of the bank.

Mr. Nielsen, a native of Belden, Nebr., has served in various capacities since he joined B & W in 1924. He is a member of the American Bureau of Shipping, American Society of Mechanical Engineers, American iSociety of Naval Engineers, and the Society of Naval Architects and Marine Engineers.

Mr. Nielsen's directorships, in addition to The Babcock & Wilcox Co., include Babcock-Wilcox & Goldie-McCulloch Limited, Diamond Power Specialty Corp., The Bailey Meter Co. and The Lummus Co.

Appointment of WENDELL V. RICHARDS, as a product specialist in the Construction Machinery Division of Clark Equipment Co., Benton Harbor, Mich., has been announced. Mr. Richards has 20 years' experience in the construction and heavy earthmoving fields. Prior to Clark he was with R. G. LeTourneau, Inc., and LeTourneau-Westinghouse Co. in sales and market research activities.

BETTER FRAGMENTATION with Spencer Prilled Ammonium Nitrate now permits stripping units to move up to 25% more material. Read below why Spencer Prills are superior to other types of nitrate solids!

Cut Blasting Costs 50% with Spencer Prilled Ammonium Nitrate

Independent laboratory tests prove that porous structure of Spencer product develops more effective and higher speed blast.

Because ingredients cost less, and the mixing process is so much simpler, blasting costs can be cut up to 50% by using Spencer Prilled Ammonium Nitrate. At the same time, this product produces better fragmentation, yielding up to 25% more material.

The basic ingredient is Spencer Prilled Ammonium Nitrate. Impartial laboratory tests have now proved that the porous structure of these prills makes them the most effective and highest-speed blasting agent of any manufactured nitrate solid. This conclusion has been further verified by extensive field tests.

More even distribution made possible by the prills is one important reason for the superiority of Spencer Prilled Ammonium Nitrate. And, since the deflagration of a solid explosive is layer by layer from the surface of the particle, the additional surface available on the prill speeds up decomposition.

Contrary to popular opinion, the lesser bulk density of prilled ammonium nitrate actually *increases* rather than decreases the energy of the explosion. This fact is verified, not only by such an authority as the ENCYCLOPEDIA OF CHEMICAL TECHNOLOGY, but also by comparative field tests. And more intense explosion means better fragmentation.

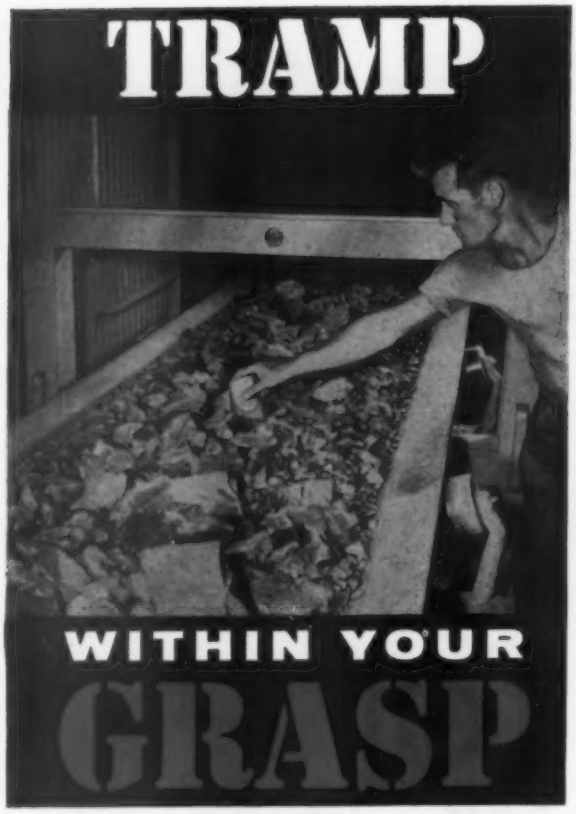
Not explosive in its normal form, Spencer Prilled Ammonium Nitrate can be handled safely, and because the mixing operation is so simple and safe, it can be done right at the mine location.

As supplier of the original nitrate used in the early stages of developing the Akremite Blasting Process, Spencer Chemical Company has been closely associated from the very beginning with this project to create less expensive blasting techniques.

For more specific information about low-cost blasting for coal, iron, limestone or construction, write to Spencer Chemical Company. We will be glad to supply you with any needed technical assistance or service.

SPENCER CHEMICAL COMPANY

610 Dwight Bldg. • Kansas City 5, Mo. BAltimore 1-6600



HOW would you like to be able to "lay your hands" on every piece of tramp metal now threatening your crushers BEFORE it had a chance to do its dirty work? You can do just that with the RCA Metal Detector on your conveyors. This electronic marvel "looks" below the surface and automatically spots those hidden drill bits, bucket teeth, bolts and other stray metal pieces—magnetic or non-magnetic—that can cause such damage to expensive machinery. Wired to sound an alarm, spray-mark the metal area, or stop the conveyor when trouble threatens, the Detector prevents downtime from cutting into profits, can quickly pay for itself.

ASK THE RCA SALES REPRESENTATIVES:

Agren-Ascher Company
Detroit, Michigan
Ambler Company
Denver, Colorado
W. G. Ballantyne Company
Portland, Oregon
F. H. Bathke Company
St. Paul, Minnesota
W. H. Del Mar Company
Los Angeles, California
Dixie Engineering Company
Birmingham, Alabama
J. Guy Griffith Company
Pittsburgh, Pennsylvania
Alfred Halliday Company
Louisville, Kentucky
Harris & Underhill Associates
Boston, Massachusetts
Heil Scientific, Inc.
St. Louis, Missouri
Hersey-Thomas Company
Greenville, South Carolina
Jones-Philibert Company
New Orleans, Louisiana
W. T. Kendall Company
Cuyahoga Falls, Ohio
Kornfeld-Thorp Company
Kansas City, Missouri
Robert L. Latimer
Philadelphia, Pennsylvania
M & R Sales
Dallas, Texas
Mills Engineering Sales, Inc.
Chicago, Illinois
W. W. Mills
Houston, Texas
Oneal Corporation
Jersey City, New Jersey
Henry P. Thompson Company
Cincinnati, Ohio
Western Sales Engineering Co.
Salt Lake City, Utah
L. P. Zumstein
Port Orange, Florida

Or write to Radio Corporation of America, Dept. R-236, Building 15-1, Camden, N. J.

A. E. DOUGLASS, president of Fuller Company, Catasauqua, Penn., for many years, has been named chairman of the board of directors.

CHANNING O. DAVIS, a Fuller vice-president, was elected to succeed Mr. Douglass as president of the firm.

G. K. ENGELHART was named president of the Sutorbilt Corp. of California, a wholly-owned subsidiary of Fuller. He will also continue as a vice-president of Fuller Company and remain in Catasauqua. The first is a subsidiary of General American Transportation Corporation.

Fuller Company also announces a 50 per cent expansion of its Catasauqua manufacturing facilities. The expanded plant will be completed and ready for production by early summer.

Link-Belt Company, Chicago, Ill., has moved its district office from Newark, N. J., to larger quarters in a new building at 293 Morris Avenue in Summit, N. J.

The move was made necessary because of the expansion of the company's operations in the area and to give better service to industrial customers for materials handling, processing and mechanical power transmission equipment.

Link-Belt has also moved its Louisville district office to larger quarters at 235 East Burnett Street. The new location is just west of the new North-South Freeway.

The board of directors of Buffalo Forge Co., Buffalo, N. Y., have appointed CHARLES W. LOCKHART as sales manager of the Blower and Air Conditioning Division. He joined the company in 1936.

IMC Equipment, Inc., Atlanta, Ga., has been appointed Hydrocrane distributor in Georgia by Bucyrus-Erie Co., South Milwaukee, Wis. The firm will handle the truck-mounted all-hydraulic *Hydrocrane* — the ⅜-yd. Model H-3 with 5-ton lifting capacity, and the ½-yd. 10-ton capacity Model H-5—and the *Hydrohoe,* a hydraulically-operated dragshovel.

In serving the entire state of Georgia, IMC Equipment, Inc. maintains headquarters at 720 Spring Street, N. W., Atlanta. The new distributor is attached to Bucyrus-Erie's southern sales district which also has its headquarters in Atlanta.

Industrial Machinery Co. Limited of Halifax has also been appointed distributor in the province of Nova Soctia for Bucyrus-Erie. Complete equipment parts and servicing facilities are maintained at the distributor's plant at 163 Upper Water Street, Halifax, Nova Scotia.

The Lincoln Electric Company, Cleveland, Ohio, announces new assignments for RICHARD M. STRATTON, ROY E. WILLIAMS and MARSHALL H. FORD.

Mr. Stratton is now district manager of the Charlotte, N. C. area. Prior to his new assignment, he was a welding engineer for Lincoln in Baltimore and, earlier, Washington.

Mr. Ford has been appointed district manager of the Duluth, Minn. area. He moves to Duluth from Minneapolis where he was succeeded by Roy Williams. His first assignment with Lincoln was in Pittsburgh, Penn., from 1941 to 1947.

Mr. Williams, in assuming the position of district manager, moves up in the same office in which he has been a welding engineer. A native of Minneapolis, he was Bushing and Parts Co. in Minneapolis before joining employed by Hamilton Construction Co. and National Lincoln in 1939.

BARRON J. GUE and DAVID M. THORSEN have joined The Lincoln Electric Company's district offices at Pittsburgh, Penn. and Union, N. J., respectively.

H&L

Teeth that really dig!

Pat. No. 2,568,075
Pat. No. 2,669,153

H&L TOOTH COMPANY

1540 South Greenwood Avenue Montebello, California

DREDGE SLEEVE CLAMPS

Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC.
9th Ave. at 4th, Mendota, Illinois

The modern, effective way to handle cement for rear discharge!

OMAHA STANDARD

Air-Slide CEMENT TRAILER

incorporates the Fuller Air Slide Principle

Will cleanly evacuate 100 barrels of cement in 10 minutes. No pounding or vibrating necessary. Air pressure gives complete rate of evacuation control. Low height and perfect load distribution. Fast loading through a minimum of 3 roof hatches. Hopper bottom gravity flow models also available.

Prices and weights quoted on request.

Distributorships available in certain areas

"Custom-Made Material Trailers—for ANY Commodity"

OMAHA STANDARD
2401 W. Broadway, Council Bluffs, Iowa

FREE to Every Shop Operator

- Diesel Compression Testers
- Nozzle Testers for American Bosch, Caterpillar and Bendix Nozzles
- Cummins Injector Tester
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- General Motors Injector Testers
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- Nozzle-Injector Cleaning Tools and Lapping Blocks
- Engine Overhaul Stands
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76 Pages—275 Illustrations
56 Engine Reference Tables
26 Parts Lists

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"Our hammer mill proved it—

Only Colmonoy No. 1 hard-facing lasts so long, costs so little!"

Colmonoy No. 1 hard-facing stands up under rough conditions involving impact and abrasion. Its cost is moderate and it welds easily. Great on equipment like dozer blades, shovel teeth, crusher rolls, and conveyor parts.

The new low-hydrogen coating provides excellent arc stability and makes weld cleaning between successive passes unnecessary. You can use it on vertical surfaces, too. Colmonoy No. 1 deposits are hard: 58 to 63 Rockwell C.

Write today for more information about Colmonoy No. 1 and the rest of the Colmonoy line of hard-facing alloys.

HARD-FACING ALLOYS

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CORPORATION

BIRMINGHAM • BUFFALO • CHICAGO • HOUSTON • LOS ANGELES
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Available as 1/8, 3/16, and 1/4-inch diameter electrodes (DC), in 10 and 50 lb. metal containers.

Hendrick, Pioneer Perforator of special quality steels for over 81 years, can really cure your vibrating screen problems! Hendrick's wide experience in selecting and specifying the best analysis of steel for the aggregates industry plus their unlimited experience in perforating plate gives you a combination **1+1=2** that can't be beaten! Hendrick Perforated Plate not only stands up longer, but affords more accurate sizing. No other screening medium can compare to it for maintained uniformity of mesh, for non-blinding clearance and for long trouble-free life. For details write to Hendrick, today!

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel Flooring—Shur-Site Treads • Armorgrids • Hydro Dehazers • Petrochemical Column Internals.

Hendrick MANUFACTURING COMPANY
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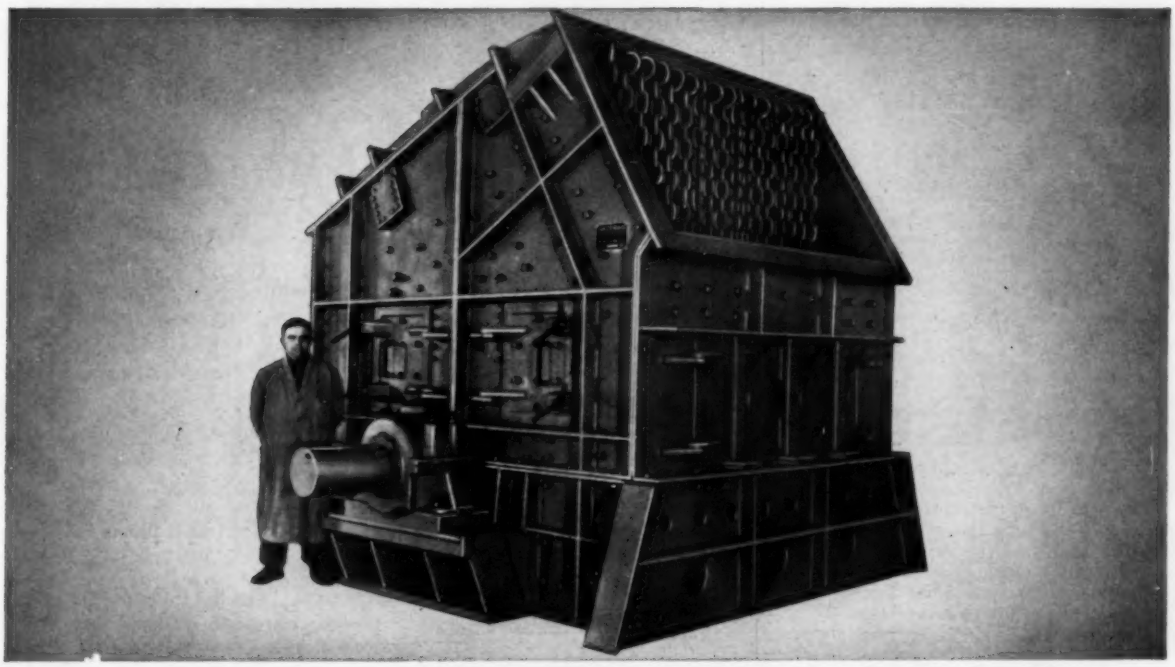
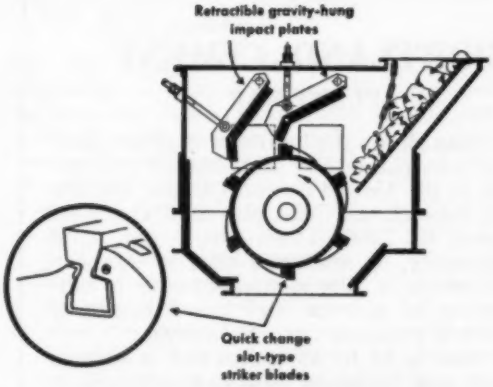
IMPACT CRUSHER–"5 WAYS BETTER!"



Shown in photograph: HAZEMAG Impact Crusher, Model #AP5BR. Rated Capacity: up to 500 tons per hour.

HAZEMAG BRINGS EXTRA PROFITS with IMPACT CRUSHING



NOTE THESE PLUS VALUES

1. HAZEMAG OFFERS A WIDER CRUSHING RANGE — from ballast to base course fines, with product sizes from 2"-3" to 0"-¼".
2. SUPERIOR PRODUCT — Cubical in shape, flats eliminated.
3. HAZEMAG'S SPECIAL FINENESS CONTROL delivers sized product, minimizing the recrushing and blending required.
4. NEW TECHNICAL DEVELOPMENTS have greatly lowered impactor wear cost to a few cents per ton of through put.
5. HAZEMAG IMPACTOR produces to accurate and most exacting aggregate specifications at biggest profit levels ever achieved.

OVER 1200 HAZEMAG IMPACT CRUSHERS NOW INSTALLED ALL OVER THE WORLD

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Mexico D.F. City

Chicago Construction Company Reports . . .

This Anthony Frameless Trailer Hauls One Extra Ton Per Load!

● During a 17 week test period of steady rock hauling; this Anthony Frameless Trailer proved itself *better in performance and more profitable to operate* than similar equipment used on the same jobs. This was the report from Consumers Company of Chicago, Illinois which is currently using this Anthony Frameless Trailer on major paving jobs in the Chicago area. Here are the conclusions they reached after a careful study of the facts:

❶ Anthony Frameless Trailers (lighter than similar hauling equipment) carry at least 1 extra ton in each payload over standard equipment.

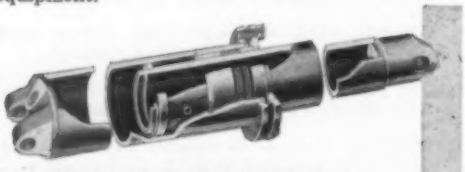
❷ In all other hauling and dumping operations, Frameless Trailers equal or exceed similar hauling equipment.

❸ It is almost impossible to get bogged down with an Anthony Frameless Trailer. If the trailer is stuck, the driver sets his tractor brakes and raises the Teleramic Hoist. If the tractor is stuck, the driver sets his trailer brakes and lowers his Teleramic Hoist.

BUY THE DUMP BODY THAT HAS THE SERVICE

Over 100 Anthony Distributors are located nationwide. At least one is convenient to you . . . ready to give immediate service on all Anthony equipment.

Complete descriptive literature is now available on Anthony Frameless Dump Trailers and Teleramic Hoists. No obligation, of course! Just write



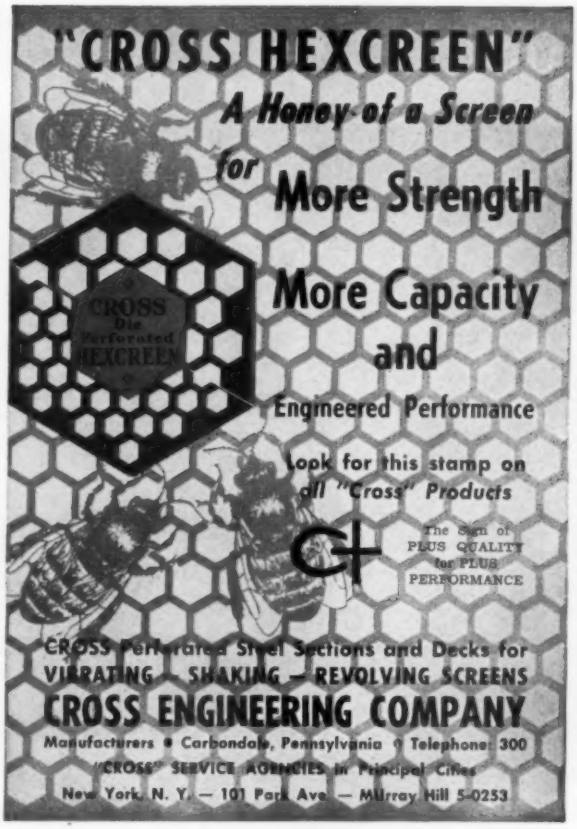
IT'S NO SECRET!

The Teleramic "V" Seal Hoist Is A Major Factor In Frameless Trailer Success

Proven "V" seal packing is only one of many quality features in the Teleramic Hoist design. Because the dry operating "V" seal is self-adjusting, repacking or manual adjustment of the Teleramic cylinder is very rarely needed. "Truss rings" encircle and reinforce the ends of each cylinder tube to prevent "flaring." Extra long bronze bearings and long overlap of the cylinders help keep them perfectly aligned.

Write: 1755 Baker Street, Streator, Illinois

ANTHONY COMPANY, STREATOR, ILL.


"CROSS HEXCREEN"
A Honey of a Screen
for
More Strength
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Engineered Performance
Look for this stamp on
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The Sign of PLUS QUALITY for PLUS PERFORMANCE
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Still Available!

NEWEST

PORTLAND CEMENT

PLANT MAP

This map shows the locations of all the portland cement plants and distributors now operating in the United States, Canada, Mexico, Alaska, Hawaii, and Cuba, plus those that were completed in 1956. These plants are listed alphabetically, by state and city, so they can be located easily. Production capacity in barrels, types of process, and brand names of each firm's products are also shown.

The map is 34 by 40 inches and is printed in black and white on heavy, durable 60-lb. paper stock. Prices are as follows:

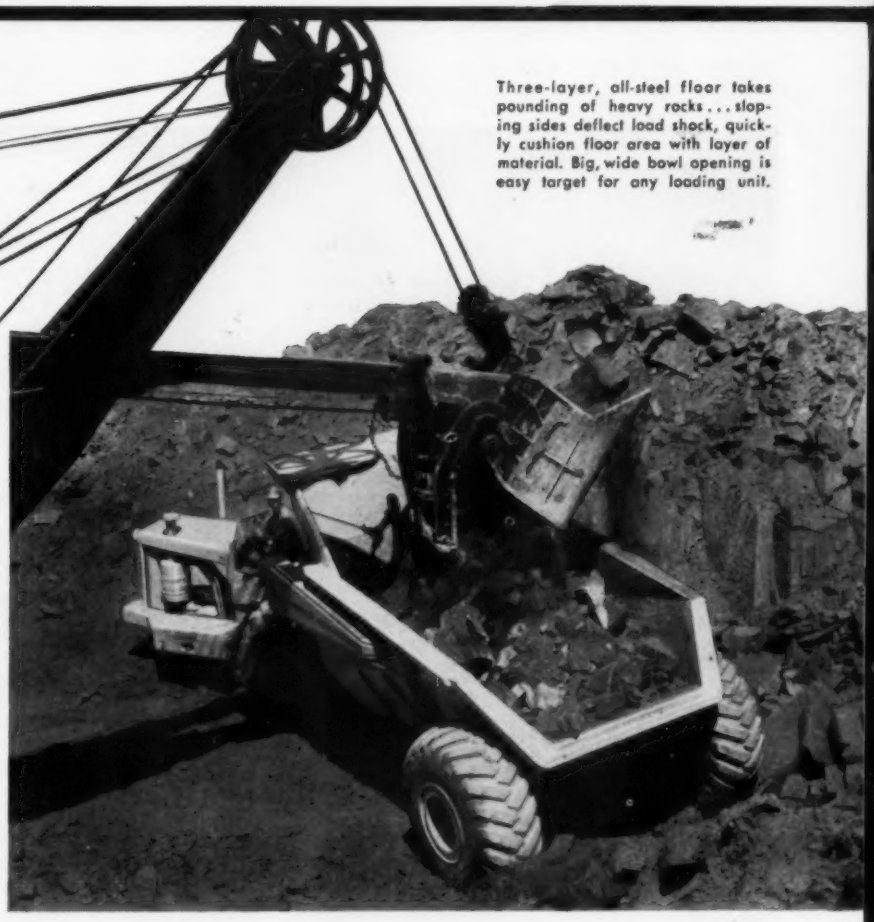
1-10 maps	**$1.00 each**
11-25 maps	**$ .75 each**
more than 25 maps	**$ .50 each**

Please make your request for these maps on your company letterhead. Also, send along a check, cash or money order to cover the number of maps you wish to purchase.

PIT AND QUARRY PUBLICATIONS

431 S. Dearborn St. • Chicago 5, Ill.

How to cut your hauling costs...



Three-layer, all-steel floor takes pounding of heavy rocks... sloping sides deflect load shock, quickly cushion floor area with layer of material. Big, wide bowl opening is easy target for any loading unit.

Your excavating and mining profits depend upon a *fast, continuous* hauling operation, all year long. Around the world, in all kinds of weather — modern LeTourneau-Westinghouse Rear-Dumps have been job-proven as high-production haulers. These high-speed units are extremely maneuverable. They haul anywhere, load and dump fast, cut weather delays, and insure future earnings. Here are the facts that back these important claims:

Hauls anywhere

With rubber-tired speeds, Tournapull® Rear-Dumps travel safely over paved highways, city streets, cross-country ... through muck, rock, and soft fill. Tournapull's ability to work through soft and slippery footing is due largely to these four L-W Rear-Dump features:

*1. **Power-transfer differential** ...* automatically transfers up to 4 times the power from slipping wheel to wheel on firmest footing.

*2. **Geared kingpin electric power steer** ...* permits operator to pivot prime-mover — up to 90° left or right — to "walk" drive wheels onto solid footing.

*3. **Big, single low-pressure tires** ...* provide traction and flotation ... stay on top of the ground, instead of digging in.

*4. **"Humping", by varying wheel base** ...* alternately pulls and pushes hauler out of ditch or mud hole. Operator sets front-wheel brakes and raises body with electric motor, pulling rear wheels forward. Then, with rear brakes set and front brakes released, bowl is lowered, pushing prime-mover wheels forward as wheel-base lengthens. Process is repeated, 'til drive wheels are on firm ground.

Easy loading

Large "target" (8'9" x 10'10" — on "C" Rear-Dump) permits easy loading without spillage. Rear of body provides wide, low entry for dipper — to give extra speed advantage for your shovel. By reducing cycle time, big-capacity Rear-Dumps make every load a profitable one!

Fast dumping

At touch of a dashboard switch, point-of-action electric motor instantly raises bowl to any desired angle. At full dump position, edge of bowl is behind and below rear wheels, so material cannot roll forward to lodge against wheels nor pile under rear end. Streamlined body sheds stickiest material readily.

Short 180° turns

"C" Rear-Dump makes continuous 180° turn in space only 28'8" wide. With body in dump position, unit can turn 180° in only 20'8"! This unusual maneuverability of L-W Rear-Dumps allows you to work in tight quarters where smaller conventional haulers often cannot go.

3 sizes; interchangeable work units

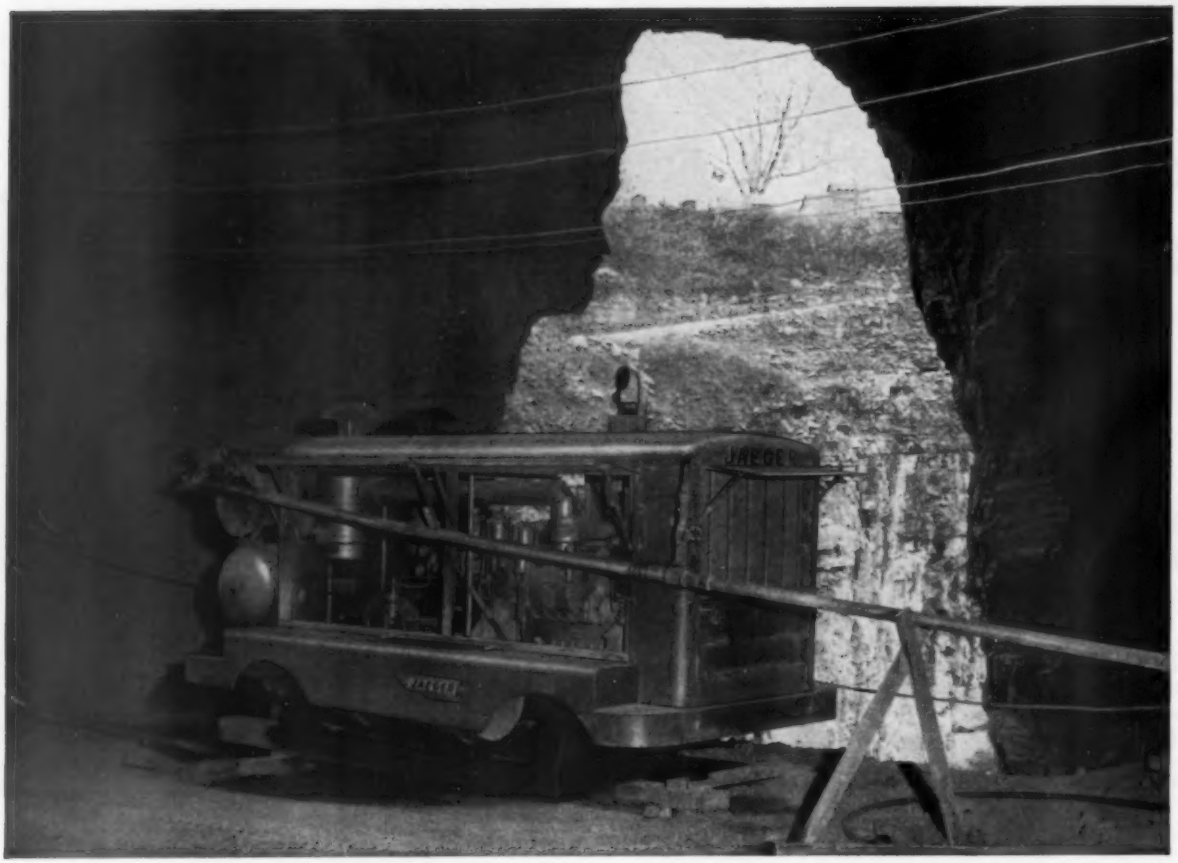
Tournapull Rear-Dumps are available in 3 sizes; 11, 22, and 35 tons. Behind basic prime-mover, other trail units — such as scraper, bottom-dump, lift-and-carry crane, logging-arch, and flat-bed hauler—can be interchanged. For just a small additional investment, they'll keep your Tournapull prime-mover profitably busy all year-around! Call or write for complete details.

R-1410-G-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

WHERE QUALITY IS A HABIT



400 FT. (IN 12-18 FT. DEPTHS) PER 8-HOUR SHIFT, IN HARD MISSOURI LIMESTONE, ON 36 GALLONS OF FUEL

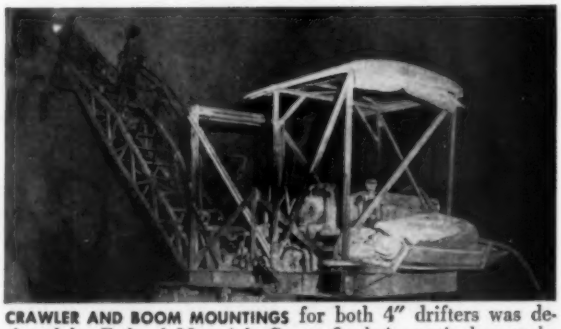
This is average day's work of this Jaeger "600" Rotary Compressor and two 4" drifters, in Federal Materials Company's underground quarry at Cape Girardeau, Missouri. A. W. Zimmer, Jr., Secretary-Treasurer and Manager, reports: "We are more than 100% satisfied with the performance of the Jaeger rotary compressor. Efficiency and fuel economy are remarkable and, except for regular filter changes, maintenance expense has been zero."

Jaeger 600 Rotary ...brings new efficiency to drilling

A Jaeger "600" rotary produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

This explains why Federal Materials Company can keep two 4" drifters drilling 8 hours in hard rock on only 36 gallons of fuel. You use less fuel, subject your engine to less wear, and turn your compressor as many as 9000 fewer revolutions every hour you work.

Smaller Jaeger Roto Air Plus® units have the same low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor —or let us mail you Catalog JCR-5.



CRAWLER AND BOOM MOUNTINGS for both 4" drifters was designed by Federal Materials Co. to fit their particular needs.

50th year JAEGER CONSTRUCTION EQUIPMENT

THE JAEGER MACHINE COMPANY

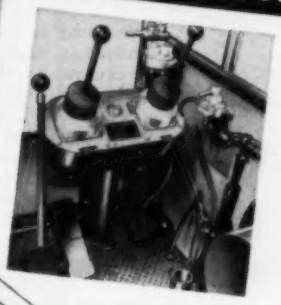
602 Dublin Avenue, Columbus 16, Ohio

PUMPS • CONCRETE MIXERS • SPREADERS • FINISHERS • TRUCK MIXERS

New LORAIN-85A

brings 2½-yd. shovel users new performance-profits!

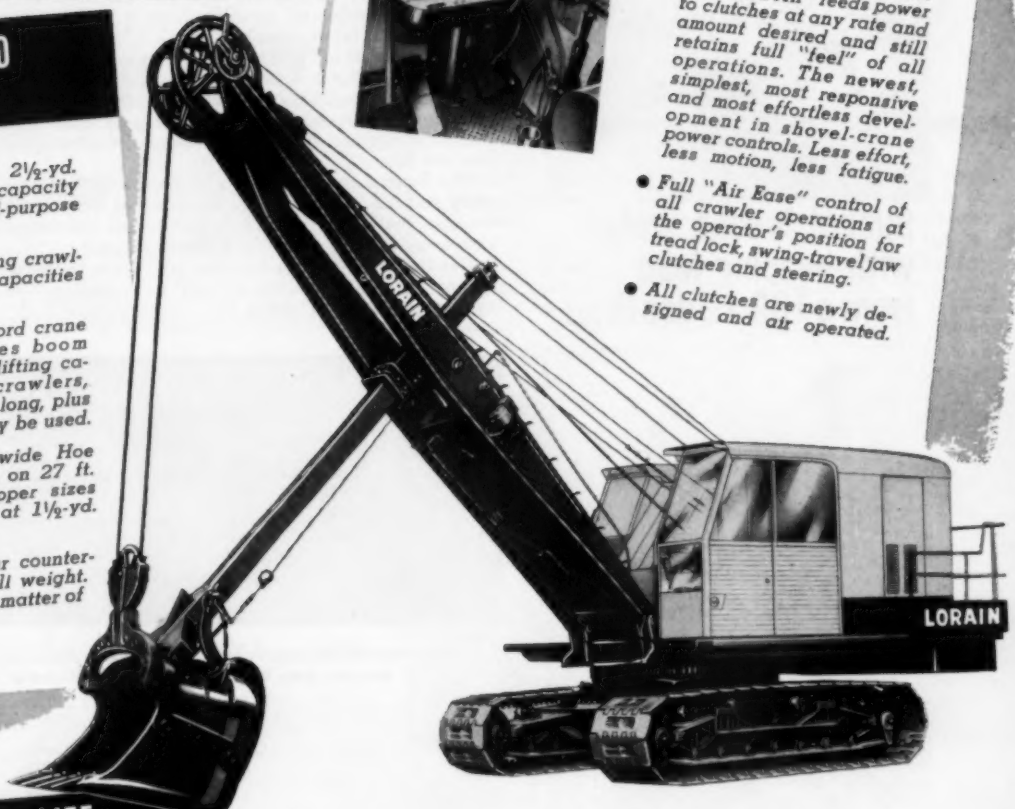
"JOY STICK" AIR CONTROL for easier operation



- *Greater operating ease with 2-lever "Joy Stick-Air Ease" power controls. "Metered Air" feeds power to clutches at any rate and amount desired and still retains full "feel" of all operations. The newest, simplest, most responsive and most effortless development in shovel-crane power controls. Less effort, less motion, less fatigue.*
- *Full "Air Ease" control of all crawler operations at the operator's position for tread lock, swing-travel jaw clutches and steering.*
- *All clutches are newly designed and air operated.*

FOR INCREASED CAPACITIES

- *The Lorain-85A is a 2½-yd. shovel with 41 to 48-ton capacity as a crane on a general-purpose 2-speed crawler.*
- *An extra-wide, extra-long crawler provides for crane capacities of 50 to 60 tons.*
- *New square-tubular-chord crane boom design reduces boom weight and increases lifting capacities. On large crawlers, boom length to 200 ft. long, plus 40 ft. tip extension may be used.*
- *New 2½-yd., 62-in. wide Hoe bucket now available on 27 ft. boom. Other Hoe dipper sizes available beginning at 1½-yd. sizes.*
- *New, removable rear counterweight reduces overall weight. Can be removed in a matter of minutes.*



FOR LONGER LIFE LESS SERVICE COST

- *New Shear Ball mounting . . . the new idea in turntable mounting design. Turntable is secured to crawler and revolves easily and freely on a huge "ball bearing." No center pin or nut—no turntable rollers—with their adjustments, maintenance and lubrication.*
- *Torque converter power-take-off is available for the most efficient, smoothest method of taking full advantage of the abundant power supplied for turntable operations. "Never-say-die" power; adjusts automatically to digging needs; no shock; no stall.*
- *Generous use of anti-friction bearings throughout the new Lorain-85A. Used on hoist drums, swing drums and retract and crowd clutch drums. Crane boom head sheaves also on anti-friction bearings.*

Nothing has been spared in the new Lorain-85A to put it far ahead of the field in the 2½-yd. shovel-crane class. Every improvement, every refinement—from the new look in the new cab to the hidden anti-friction bearings—has been incorporated to give owners the last word in performance and profits. Many design improvements that increase capacity and result in easier, smoother operation enable the "85A" to live a longer, trouble-free life.

Don't miss seeing it. Ask your Thew-Lorain Distributor for all the facts and figures. Make every comparison. Only then can you appreciate the Lorain-85A built-in values that will pay you profits for a long time to come!

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN®

NEW SAUERMAN SLACKLINE CABLEWAY INCREASES PRODUCTION OVER 25%

Bucket breaks water with heaping load from a 100 ft. depth...

Wherever deep digging is required and operating spans are long, the new Sauerman Slackline is adding to its margin of superiority over other types of excavators. Production increases of over 25% and in some unusual cases as high as 80% are reported.

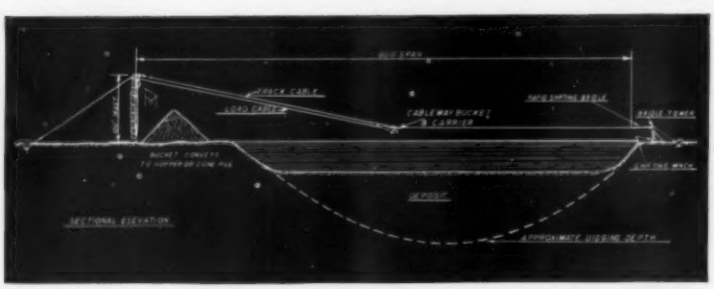
Not only is production increased but operating costs are lowered as cable and hoist wear is reduced and the machine runs with fewer peak loads and shocks—all possible from a cushioned drive using a torque convertor and other refinements.

These benefits are also available to present owners of slackline cableways. Guaranteed Gravel & Sand Co., a Sauerman Slackline user for over 35 years, has increased hoist speeds from 230 to 350 fpm. on the digging cycle and conveying speed to 800 fpm.—a gain of 25%. Guaranteed's 2-cu. yd. bucket is digging 450 ft. away from the surge pile and delivers 150 cu. yds. per hr.

The Sauerman Method lets you work distant material—up to 1,000 ft. away and dig 100 ft. or more below water. Now more than ever the greater tonnage available through fluid drive operation makes a Sauerman Slackline Cableway the low cost way for deep digging.

Get the best machine for your job. Write to Sauerman for expert advice on any materials handling project. For additional information on slackline cableways, ask for Catalog C.

is conveyed and dumped automatically at surge pile.

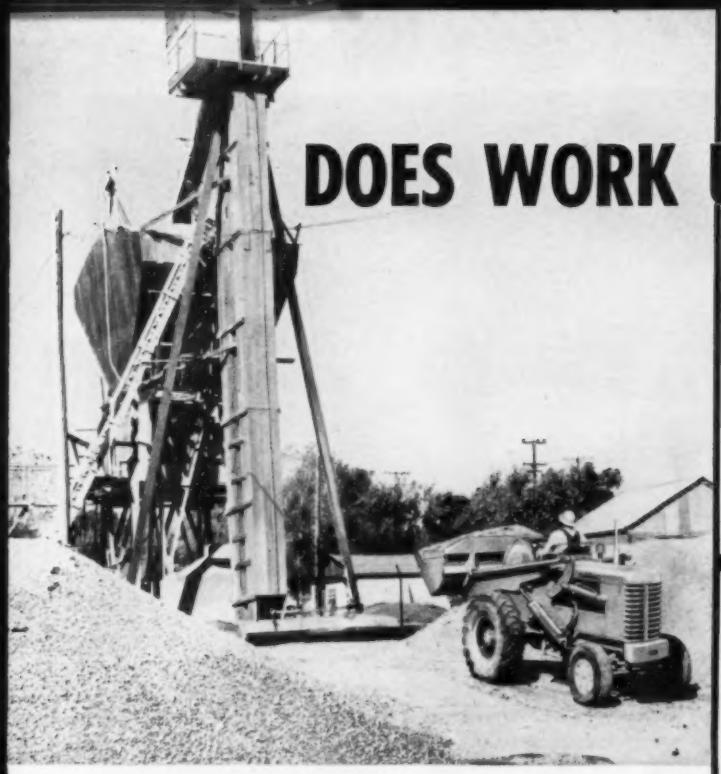


Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Guaranteed Gravel and Sand Co.'s slackline bucket dumps 150 cu. yds. per hr. on surge pile from digging point 450 ft. away.

SAUERMAN BROS. INC. 634 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS



DOES WORK USUALLY HANDLED BY CLAMSHELL

...plus many other jobs

HOW IT'S DONE At left is over-all view of bucket elevator with a two-compartment overhead bin — one for sand, one for gravel. At the base of elevator is a ground level hopper which is kept filled by the TL-11 TRACTO-LOADER (below).

Operator said he likes the stability of the TL-11—carries heaping loads without rocking. In the TL-11, you get the long wheel base and strong construction of the 4-wheel drive TL-12 TRACTO-LOADER . . . plus the short turning radius of the 2-wheel drive TL-10.

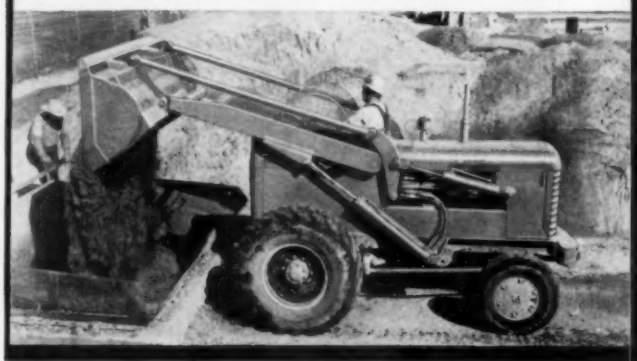
versatile

TRACTOMOTIVE TL-11 TRACTOLOADER®

keeps down operating cost for ready-mix plant

No big, expensive, single-purpose machines for Ready-Mix Concrete, Muskogee, Oklahoma. Its low-cost TRACTO-LOADER keeps the bins well-supplied with sand and gravel . . . and fills in "waiting periods" by doing other jobs — transports concrete pipe, reinforcing wire and rods, concrete block . . . loads cinders . . . does general yard cleanup work.

Equipment that keeps producing all day, every day, keeps your income up, your costs down. Ask your Allis-Chalmers construction machinery dealer to show you the multi-purpose TRACTO-LOADERS. Choice of five models; gasoline and diesel.



FLOOR WORKING AREA IS KEPT LEVEL with the TL-11 because operator has hydraulic control of bucket — no digging below grade. Loads are heaped, too, because there is a scooping action with TIP-BACK BUCKET and smooth, positive crowding with HYDRAULIC TORQUE CONVERTER DRIVE.

BUCKET CAPACITY: 1⅛ cu yd
BRAKE HP: 63 (gasoline)
77 (diesel)

SPEEDS: 4 forward; up to 20 mph
4 reverse up to 25 mph
WEIGHT: 11,300 lb (gasoline)
11,500 lb (diesel)

TRACTO — *a sure sign of modern design*

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inside story of a longer grind

Moly-Cop is hard and tough to the core...

A look inside this Moly-Cop ball shows a uniform, fine grain structure extending to the core. It is the result of special alloying, forging and heat treating that provides a hardness and toughness best suited to grinding needs. This is why you can expect a long, economical grind from Moly-Cop balls. It's the big reason why *Moly-Cop* balls have become the *STANDARD OF COMPARISON AROUND THE WORLD.*

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Grinding Balls

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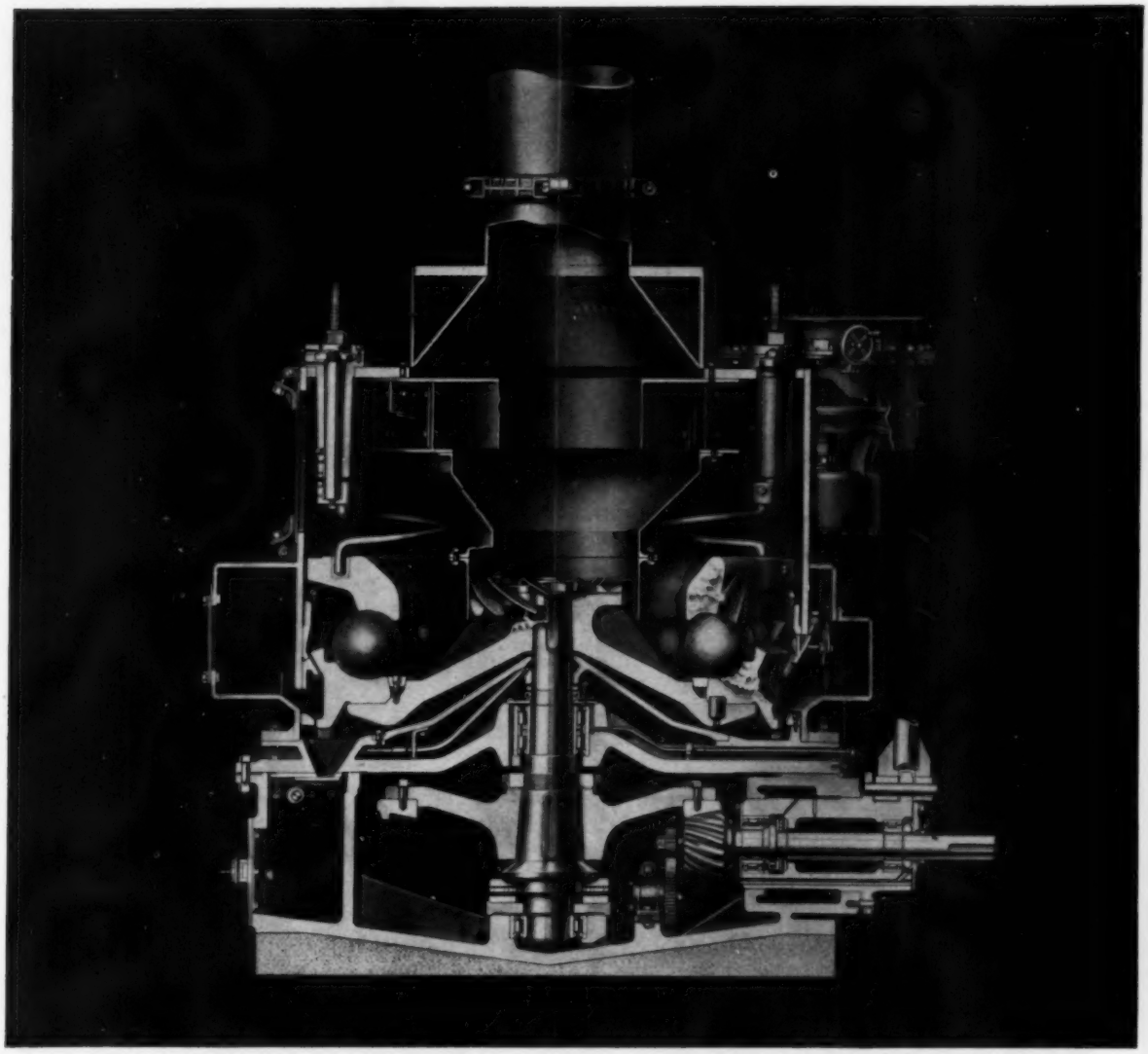

This B&W Type EL Pulverizer has a rated capacity of 18,000 lb of coal per hr.

16 B&W Pulverizers Save Fuel For Marquette

Over a period of years Marquette Cement Mfg. Co. has had successful experience with B&W Pulverizers in direct-firing service. Recently, a Type EL was installed at the Des Moines plant, and a Type EL has been ordered for the Cape Girardeau plant. After the latter is placed in service, Marquette will have 16 B&W Pulverizers.

Type EL Pulverizers have made impressive performance records for direct-firing of rotary kilns. They maintain high fuel economy, even when firing low grade coals. They can be operated continuously for long periods, shutting down only for infrequent inspection. Tough, wear-resistant grinding elements are externally adjusted.

Many Cement Manufacturers are gaining marked operating and maintenance savings—in addition to safety, reliability, and low first cost—with B&W Pulverizers. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

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because he gets
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Traylor TC Gyratory Crushers are Traylor-made in 7 sizes with feed openings from 20″ to 60″ . . . capacities range from 1240 to over 32,000 tons per eight-hour day. For complete capacities, specifications and descriptions, send for Traylor Bulletin No. 11–120.

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the experts agree . . . there's nothing like

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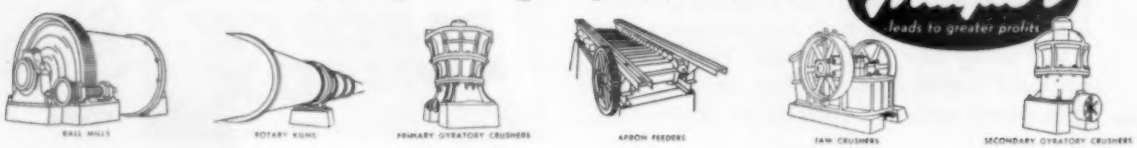
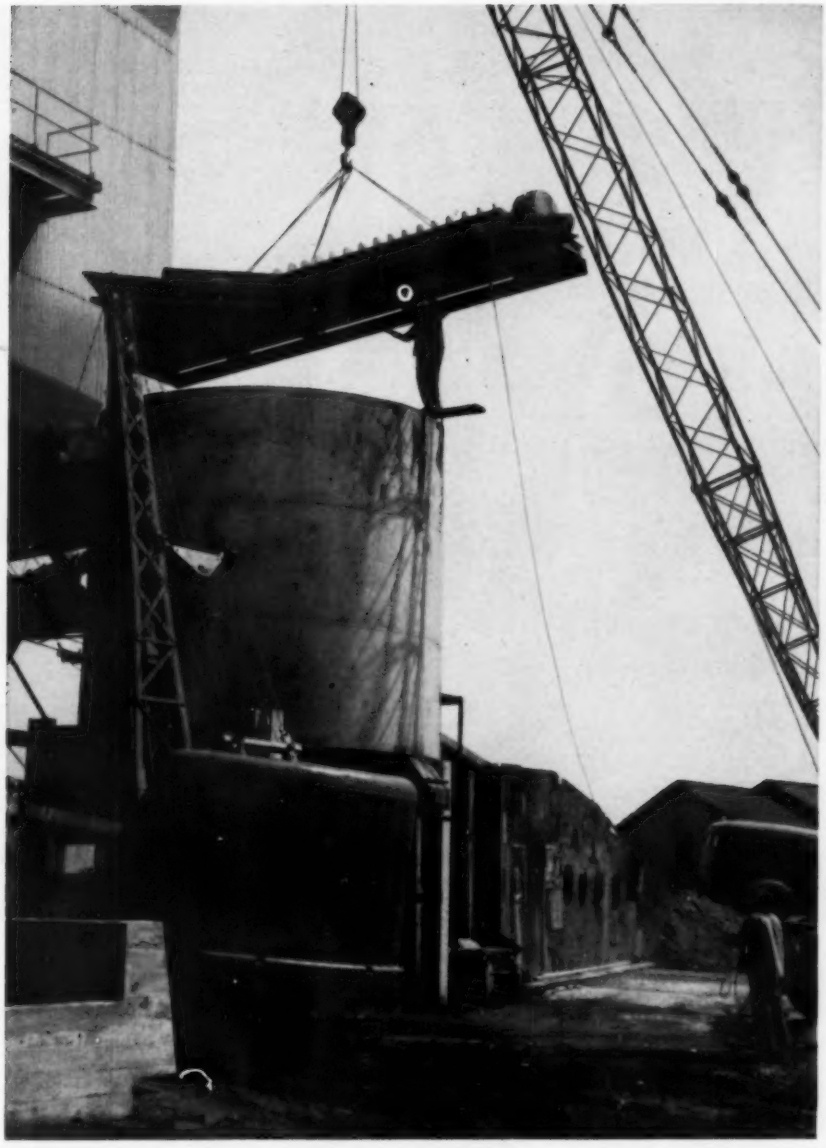
equipment for peak performance

A Traylor leads to greater profits





at Pacific Building Materials, Portland Oregon . . .

UP GOES ANOTHER **SAND PREP**

No. 8 in a series of steady WEMCO producers

1956 addition to this Portland company's sand recovery operation is the 36-inch Wemco Sand Preparation Machine being installed above. It has an outstanding performance record to live up to! For instance, since the first of 7 similar Wemco units went into operation in 1948, plant manager Howard Hamlin reports that to date **"Only $33 worth of spare parts have been ordered."** But the real story of Pacific's continued use of Wemco Sand Preparation Machines lies in their ability to invariably produce specification materials under all feed conditions. Wemco's slow-speed, multiple-pitch spirals, operating in a large, quiet pool, insure the recovery of the desired fine (150 mesh) sand without a sacrifice in raking capacity. This unbeatable combination of low-operating costs and specification sand spell profits for Pacific on every one of their 8 Wemco units. They can do the same for you.

Send Wemco your sand problems for profitable solutions.

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WESTERN MACHINERY COMPANY

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Representatives in principal cities of the United States and Canada and in major countries throughout the world.

CLYDE E. WEED

Portrait by Fabian Bachrach

"22,514 Anaconda Employees Are Buying U. S. Savings Bonds

"In October, 1955, only 34% (11,140) of the nearly 33,000 Anaconda organization employees in this country were buying U. S. Savings Bonds through the Payroll Savings Plan.

"Late in 1955, we conducted a simple person-to-person canvass which put a Payroll Savings Application Blank in the hands of every employee. There was no pressure, no special promotion – just the Application Blank. Our employees did the rest.

"Recently, our records showed that 22,514 of our men and women—69%—are now Payroll Savers. Every new employee is given a Payroll Savings Application Blank and an opportunity to join with his fellow workers in building personal security through systematic thrift.

"We believe The Payroll Savings Plan—with an enrollment of 8,000,000 employees of more than 40,000 companies—is a significant contribution to the Government's effort to check inflation and maintain a sound dollar."

CLYDE E. WEED, *President*
The Anaconda Company

Why not take a *personal* interest in *your* Payroll Savings Plan? Your State Director will be glad to show you how to install the Payroll Savings Plan or revitalize an existing plan. Phone, wire or write, today, to Savings Bond Division, U. S. Treasury Department, Washington, D. C.

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Earth Mover Tire Recapping Service
CUTS COSTS PER MILE AND PER TON

WE GO ANYWHERE, ANYTIME,
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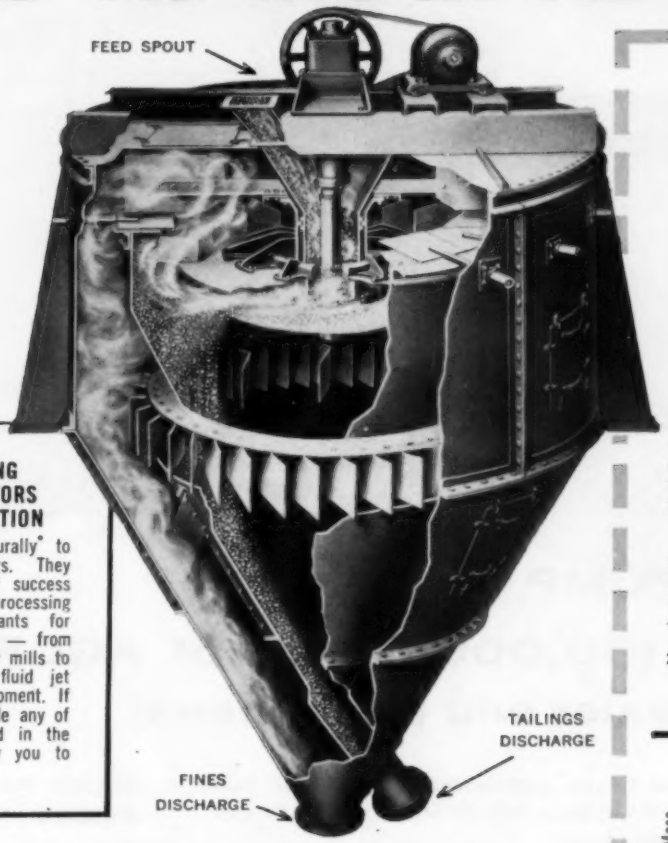
40 TO 400 MESH OUTPUT UPPED AS MUCH AS 300%



ENGINEERING AIR SEPARATORS TO SPECIFICATION

. . . comes naturally to Sturtevant engineers. They have a tradition of success in developing dry-processing equipment and plants for more than 75 years — from the first rock emery mills to the most modern fluid jet micron-grinding equipment. If your problems include any of the processes listed in the coupon, it will pay you to investigate.

WHAT CAN A STURTEVANT AIR SEPARATOR DO IN YOUR PULVERIZING SYSTEM?

In the cement industry, Sturtevant Air Separators have a tested record of increasing mill capacities from 25 to 300% while lowering power consumption as much as 50% — when used in closed circuit with grinding mills. Maybe they can do as well for you.

Easily adaptable to your materials. Sizes of Sturtevant Air Separators range from 3 to 18 feet in diameter. They deliver fines from 40 to 400 mesh at rates as high as 100 tons per hour.

Designed to cut costs! Sturtevant Air Separators are built for a lifetime of low-downtime service. Rugged construction plus easy accessibility for quick maintenance (typified by the "OPEN-DOOR" design in other Sturtevant equipment) assures more output per machine-year. Check the coupon for more information.

STURTEVANT

Dry Processing Equipment

The "OPEN-DOOR" to *lower* operating costs over *more* years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS
BLENDERS • GRANULATORS • CONVEYORS • ELEVATORS

STURTEVANT MILL COMPANY, 104 Clayton Street, Boston 22, Mass.

Please send me your bulletin on Air Separators ☐
Also bulletins on machines for:

☐ CRUSHING ☐ GRINDING ☐ PULVERIZING
☐ MICRON-GRINDING ☐ SEPARATING ☐ BLENDING
☐ SUPERFINE SELECTING ☐ GRANULATING ☐ CONVEYING

My dry-process materials are: _____

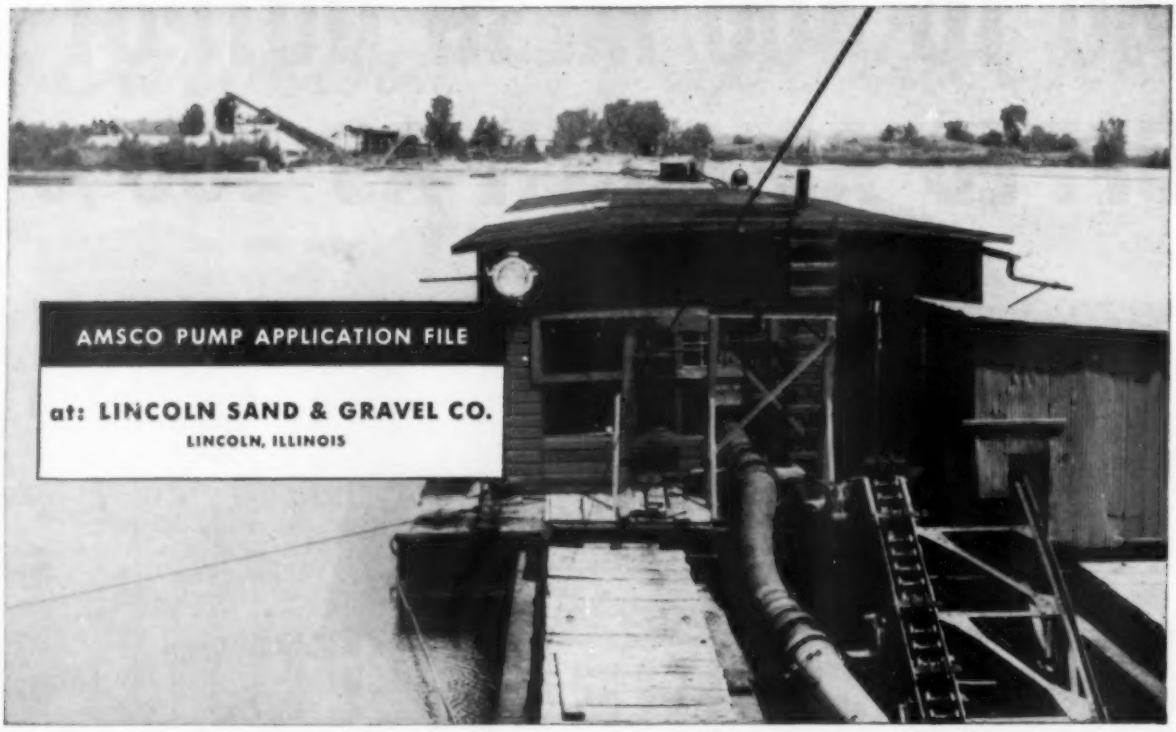
Desired capacity is: _____

Name _____ Title _____

Firm _____

Street _____

City _____ Zone _____ State _____



AMSCO® PUMP DELIVERS 150,000 TONS of AGGREGATE

. . . before water end part renewal

Herman Clouse, Superintendent of Lincoln Sand & Gravel Company, tells the facts about his 30-year-old Amsco pump.

This 10-inch pump dredges sand and gravel from two different deposits. One is a 30% sand, 70% gravel mix. The other is about 70% sand, 30% gravel.

Water end parts last three to four months, during which the pump delivers approximately 150,000 tons of aggregate. End parts are replaced after that time, and the parts removed are rebuilt with Amsco welding rod. Then, they're used again before being scrapped. Down time for replacement is only about three hours.

And Mr. Clouse adds that the bearings on this veteran pump have been *replaced only once in the last eight years.*

In 1953, when Lincoln's operations were moved farther out into the lake, a second 10-inch Amsco pump was installed as a booster. Including the extension, the pipeline is now 1800 feet long . . . single stage . . . with a 35 to 38-foot lift.

QUICK FACTS ABOUT AMSCO PUMPS

Water end parts, cast of tough manganese steel and other special alloys, give Amsco pumps extra resistance to the impact and abrasion of aggregate.

Encasing the shaft in the packing area is a heavy, corrosion and abrasion-resistant sleeve. The deep-grooved, two directional thrust ball bearings are *oversized* to operate smoothly under strain, and to withstand long service.

Standard sizes range from 6″ to 20″ discharge openings. Larger sizes are also available.

Write for Bulletin No. 1052P which includes specifications and additional information on the Amsco line of pumps.

AMERICAN Brake Shoe COMPANY

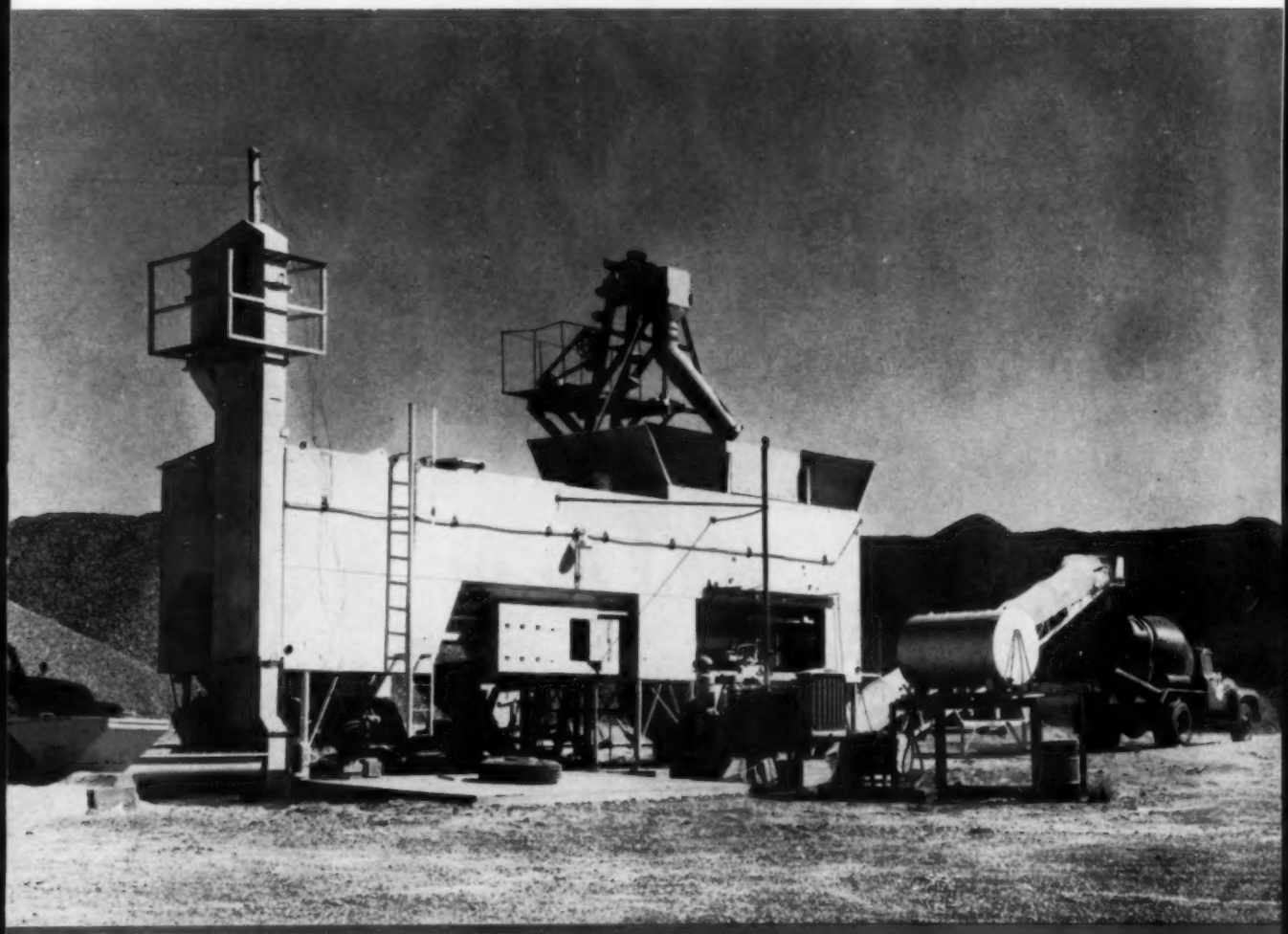
AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

For the manufacturers of
Ready-Mixed Concrete
Prestressed Concrete
Precast Products
Concrete Blocks
Concrete Pipe

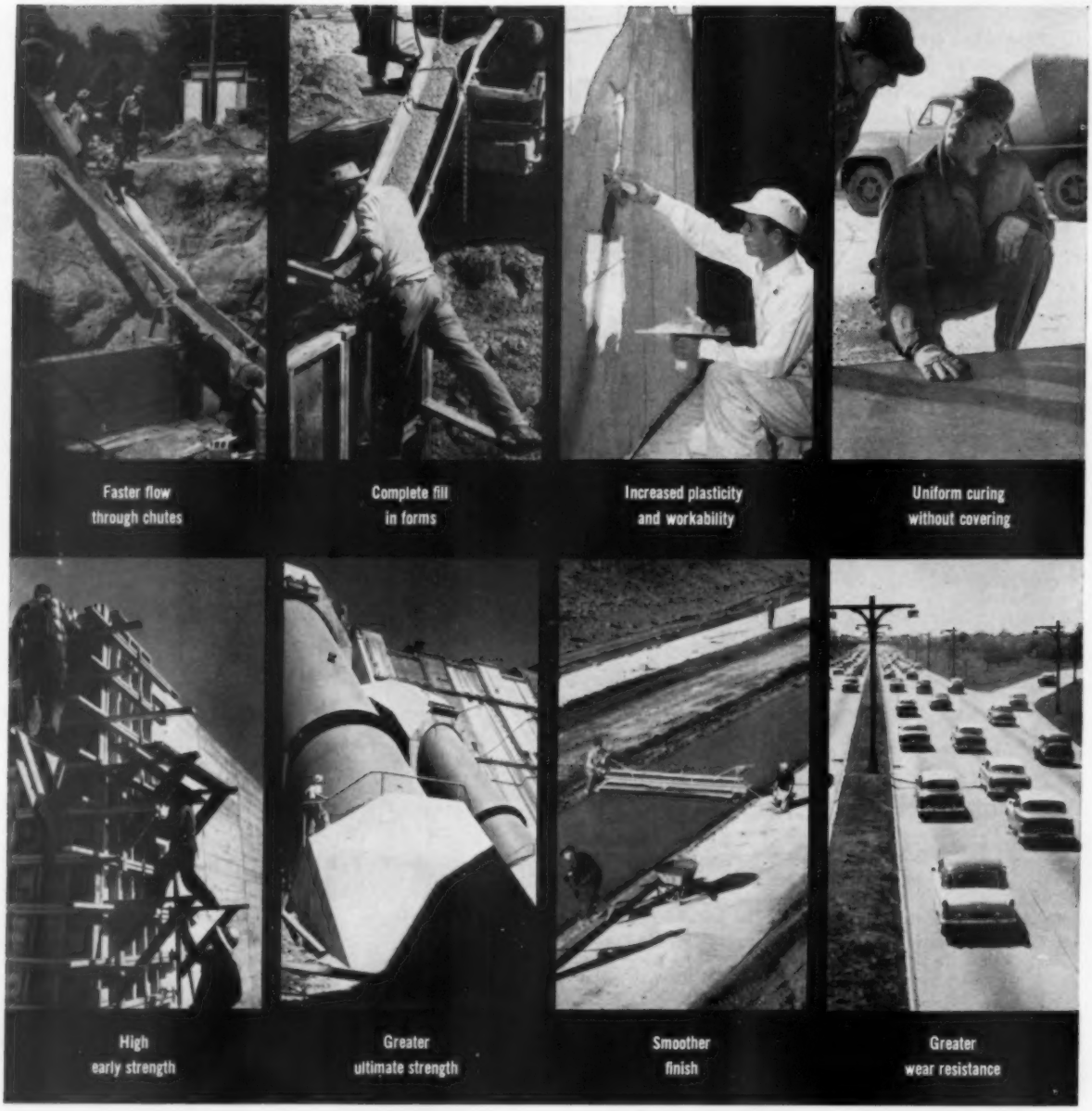
APRIL 1957

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY



This Type of Ready Mixed Concrete Portable Batching Plant With Power Unit Is Becoming More Popular Everywhere.



Better concrete from flow to finish with Dow Calcium Chloride

Anything made with concrete benefits with Dow Calcium Chloride included in the mix, especially in cold weather construction.

It speeds production, assures a stronger, higher quality concrete that requires little pointing up. And it adds very little extra cost to the price of the concrete!

In addition, Dow Calcium Chloride comes in two forms—Dowflake®, the flake type—and Peladow®, high-test pellets with 94-97% concentration. One is just right for your particular operation and concrete application.

Descriptive information on how to make concrete better from flow to finish can be yours by writing us direct. Do it today. THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. IN 705V.

YOU CAN DEPEND ON DOW

KISSAM OF ORLANDO, FLA.

KISSAM BUILDERS' SUPPLY COMPANY
BUILDING MATERIAL • KISSAM TILE
ORLANDO, FLORIDA

Mr. Myron Hultmark
Pres. & Gen. Mgr.
Stearns Mfg. Co., Inc.
Adrian, Michigan

January 23, 1957

Dear Sir:

We are very pleased with the blocks that our new Electromatic machine is producing. You will be interested to know that the reaction of local architects, contractors, builders, and masons has been very favorable and is resulting in new customers for Kissam blocks.

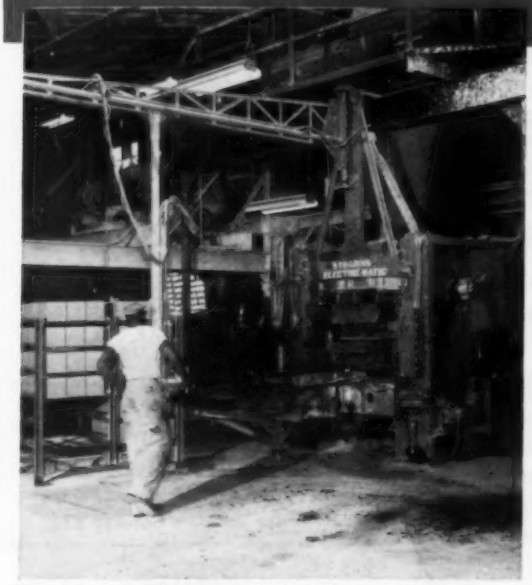
We are glad we bought our Electromatic—.

KISSAM BUILDERS' SUPPLY CO.

By: Kenneth F. Hill
Kenneth F. Hill, President

NOW Makes Highest Quality Block ...Gains New Customers with their new ELECTROMATIC

Shown left to right are Mr. Gus Schaeffer, Supervisor of Maintenance; Mr. Kenneth F. Hill, President; Mr. Roy Pulsifer, Secretary; Mr. Oland C. Avery, Block Plant Supervisor.



The Stearns Electromatic installation at Kissam Builders' Supply Company, Orlando, Florida.

Architects . . . Contractors . . .
Builders and Masons . . .
Specify Block Produced
on STEARNS Equipment

HIGHER PRODUCTION, Yes . . . but of greater importance . . . the dependable, constant production of HIGH QUALITY BLOCK from the Stearns Electromatic has won for Kissam many new customers . . . who specify and demand top *QUALITY*. Electromatic owners from coast to coast, using practically every type of aggregate, are reporting these very same facts . . . unparalleled production, *PLUS* top *QUALITY* units.

The Electromatic will produce more and better blocks for you too! . . . At lower unit cost . . . For more profit! See for yourself! Write today for complete information, and the installation nearest to you.

ASK ANY OWNER!

STEARNS
MANUFACTURING COMPANY • INC.
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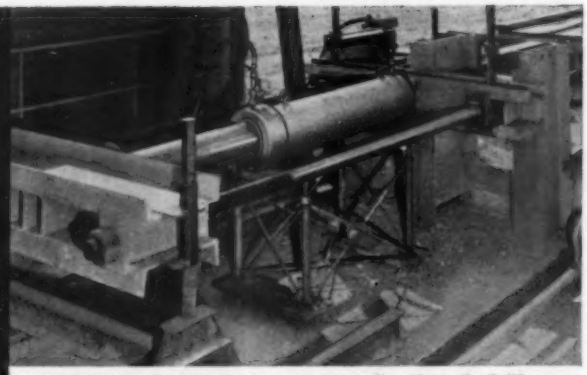
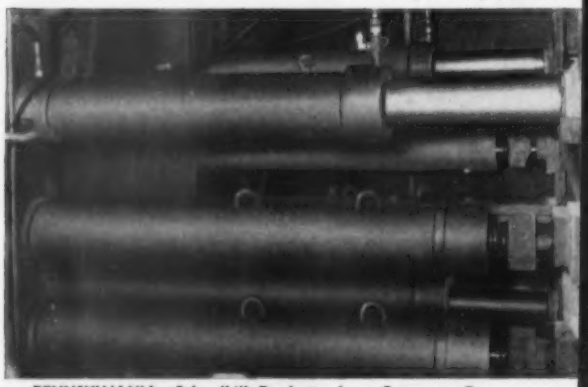
COMPLETE CONCRETE PRODUCTS PLANT EQUIPMENT

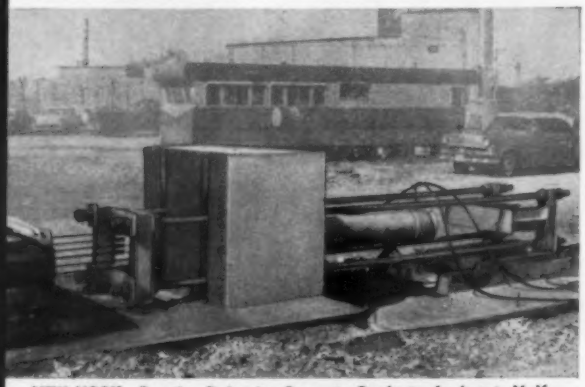
NORTH CAROLINA—North Carolina Products Corp., Raleigh, N. C.



CALIFORNIA—Rockwin Prestress Concrete Co., Norwalk, Calif.



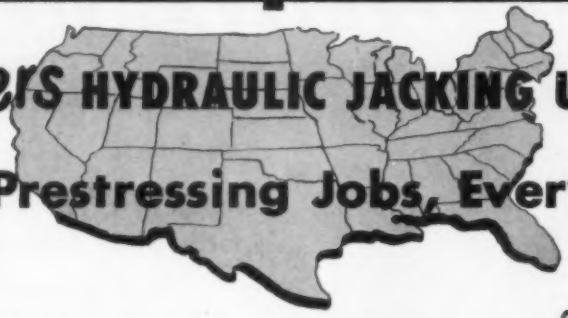
PENNSYLVANIA—Schuylkill Products, Inc., Cressona, Pa.



NEW YORK—Frontier Dolomite Concrete Products, Lockport, N. Y.

Rodgers HYDRAULIC JACKING UNITS

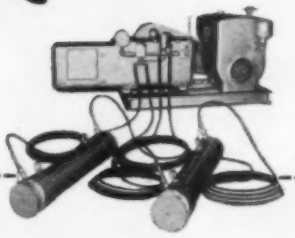
Best On Prestressing Jobs, Everywhere!



RODGERS Hydraulic Jacking Units used singly or in multiples of two, four or more provide "controlled pretensioning and detensioning" of steel strands.

Regardless of size or type of bed design—whether the jacking carriage is of rods with locking nuts or guided structural steel abutments with locking screws—Rodgers Jacks assure smooth, positive action. Accurate control of pump and jacks provides uniform pretensioning and detensioning to conform with exacting state and municipal specifications.

Prestressing units with any number of jacks are available with hand operated or power driven hydraulic pumps in capacities from 50 to 600 tons. Double-acting jacks are offered with ram travels of 30 or 48 inches. Single-acting jacks with ram travels of 6, 7½ or 13 inches.



For complete information on Prestressing Jacks and Pumps write for Rodgers Catalog 332

HI-PRESSURE Rodgers HYDRAULICS

Rodgers Hydraulic Inc.

7411 Walker Street • Minneapolis 26, Minnesota

EXPORT DIVISION
205 WEST WACKER DRIVE
CHICAGO 6, ILLINOIS, U. S. A.

The CONCRETE MANUFACTURER

April 1957

Industry's Number One Problem—People, Not Production

IN this age of automation, the application of which in the concrete industries is of a high order, the achievement of the machine is usually measured in production increase. We buy high machine capacity, but too often find it limited by the low capacity of the man who operates it. We too often forget that every machine—no matter how efficient it is—must be operated by a man, who has brought to his job his worries, his hopes, and his human frailties along with his capable hands, strong back, and I.Q.

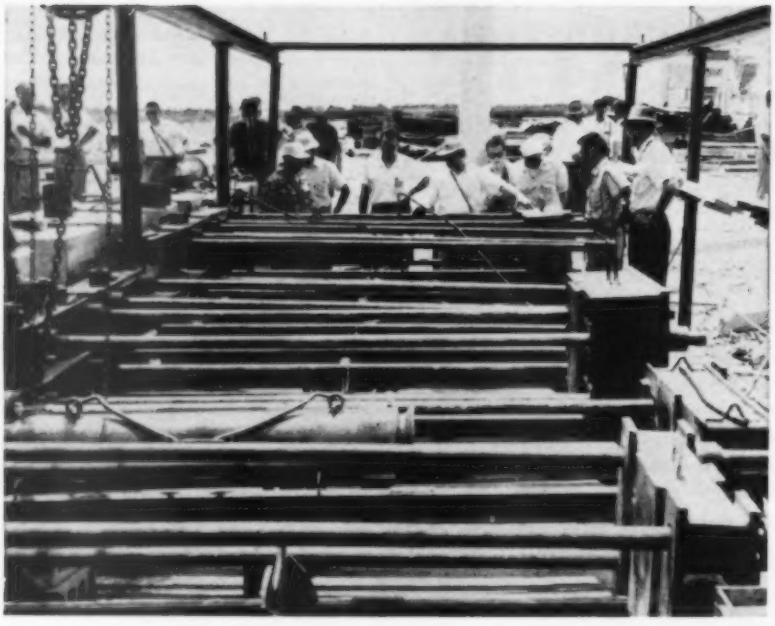
Completely smothered by the mass of data extolling the machine's capabilities is the occasional jot of advice tersely warning the employer to know his men better—or at least as well as he knows his machines. A recent American industrial survey revealed that the average worker is basically concerned with the following goals, listed in order of importance: security, satisfaction, promotion, recognition, and salary. Note that the intangible factors rank higher than the one tangible factor—salary. This finding should make all who deal with workers pause for reflection. How well you know your employees can really mean how well you know your business.

A really successful president of a large concern which grew from small beginnings once said, "I would rather know what Joe is thinking about, than to know what his machine can do." Most owners of concrete block and ready-mix companies must be personnel counsellors of high caliber if they are to succeed, regardless of the ratings of their machine equipment. We hire the whole man, not his hands, or back, or mind alone. His worries, desires, discouragements, plans, prejudices, hostilities, and fears become part and parcel of his workaday world. His work response, interest in the job, incentive to do better, and even loyalty to the firm, will depend not only upon how these factors affect him, but upon how well his employer understands him and lets him know of this understanding.

This doesn't mean getting involved in the lives of their men, nor preaching to them, nor condemning them, and certainly not patronizing them. It does mean knowing them better, thinking of the human considerations in dealing with them, and facing issues squarely with them. The executive who walks through the plant stony-faced, chatting with no one, is not just storing up poor labor relations, but is ignoring psychological factors of transcendent importance. The sooner he learns about *people,* and asks himself the question, "The machine is o.k., but how about the *man*?" the sooner will he recognize the truth of those factors, and profit thereby.

Roy L. Peck

This Amazing Prestressed Concrete Industry



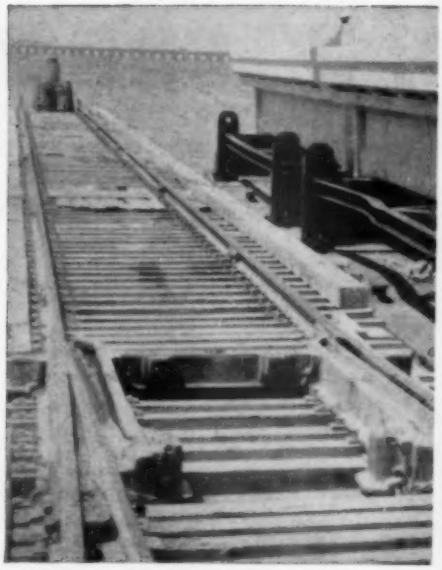
What Is Behind Its Phenomenal Growth?

This is a question which has been asked many times. Union Wire Rope Corporation has answered with the sound reasons for venturing a huge capital investment in expanded facilities and in research to master the technical know-how of producing prestressed, stress relieved, high tensile wire and strand. Without this key element prestressed concrete would still not be possible and practical.

To check our own reasons and to develop all of the fundamental facts responsible for the spreading use and acceptance of prestressed concrete,

We Asked A PANEL OF PIONEERS In the Prefabrication of Prestressed Concrete Members To Summarize the Facts Which Has Enabled Them To Maintain a Yearly Growth of 200 to 300 Percent.

What follows is straight from the horse's mouth. It is a summary of the fundamental facts contributed by a sizeable group of prestressed fabricators and consultants. All are pioneers who have had a part in the development of prestressed concrete and experienced its growth from a trickle five years ago to become the building material to be reckoned with by every factor in the building industry.



Here Is a List of Prestressed Products Which A PANEL OF PIONEERS Are Prefabricating

Girders

Roof Slabs
Regular, Lightweight, Lift, Channel, Thin shell, Hollow centers, Composite.

Beams
Joists
Trusses
Columns

Piles and Caps
Foundation, Marine, Fender

Lintels
Wall Panels
Siding
Posts

Pavements
Highway, Airport

Stadium
Framing, Seats

"Future Applications of Prestressed Concrete Beyond Prediction"

These are the words of one and the consensus of opinion of others on our panel of pioneers. Other prestressed concrete products mentioned as either being prefabricated or tested and proposed are:

- Missile Wings
- Barges
- Transmission Line Supports
- Piers
- Seawalls
- Wharfs
- Arches
- Skews
- Spring Board—For Swimming Pools
- Off-shore Drilling Piles Platforms

While some of these may seem novel, many will become commonplace. Prestressing concrete for barges, for example, could very well become an industry in itself as is the prefabricating of bridge members.

PANEL OF PIONEER Prefabricators Cite These Outstanding Prestressed Concrete Advantages...

1. Fully Utilizes Two Inherent Strength Factors

Prestressing combines and enhances the inherent characteristics of two of the foremost construction materials—

A. The compression strength of concrete with

B. The high tensile strength of stress relieved cold drawn steel wire and strand.

2. Basic Economy

A. Steel for prestressing is six times stronger than ordinary steel but only approximately 3 times more costly.

B. Concrete for prestressing is twice as strong but only 10 to 20% more costly than ordinary concrete.

C. Prestressing consumes less steel and concrete to attain equal or greater structural strength more economically.

3. Structural Balance

A. In prestressed concrete, stresses and strains are balanced to produce structures whose deflections are under definite control.

B. Cracks, otherwise unavoidable in concrete, are eliminated by prestressing.

4. Design Economy

A. Prestressed concrete makes possible thinner sections, lower depth to span ratios, longer cantilevering without ballast beams and reduction in weight. All of these factors enable the designer to effect savings in foundation, in columns, in wall height or to convert head room into usable cubage.

B. Steady progress in standardization of sections under the auspices of the Prestressed Concrete Institute is making prestressed concrete more and more versatile from the standpoint of designers.

5. Prestressing Is Pre-Testing

A. Because they are subjected to greater loads in fabrication than is imposed upon them in the field, precast, prestressed members are in reality pretested.

B. Produced by factory methods, under closely controlled conditions, prestressed concrete guarantees the designer structural performance to meet or better expectations and affords relief from extensive supervision and inspections.

6. Stock Pile Availability

A. Factory line production methods with time saving devices insures delivery of prestressed concrete members from the production line in step with contractors work schedules.

B. Production of prestressed sections proceeds at top speed, affording maximum utilization of labor and stockpiling against projected construction.

C. Prestressed concrete eliminates construction delays by by-passing materials in short supply or on extended backlog delivery.

7. Speeds Up Construction

A. Construction by the older, conventional methods involves both erection and fabrication on the job site.

B. The latter is accomplished much faster in central plants or on the site mechanized plants and the resulting prefabricated units are erected with clocklike precision.

C. Often it is possible to complete structures in half the time required by conventional methods. It is often possible to erect prestressed concrete in the time required to make, place and shore up forms for poured in place concrete.

8. Permanence of Concrete—Plus

A. Well known is the durability of concrete. Well known too is its vulnerability to cracking. Cracks lay it and its reinforcing open to deterioration.

B. Prestressing makes concrete a flexible material with the ability to withstand extraordinary deflection and recover without cracking.

9. Insurance Savings

Comparison of insurance premiums are reported on new buildings with prestressed concrete roofs as against old buildings with wood roofs. Roughly the yearly premium on the latter is more than for 5 years on buildings with prestressed roofs. Though this is a comparison of extremes, it is indicative of how prestressed construction is regarded by insurance companies.

10. Economy of Maintenance

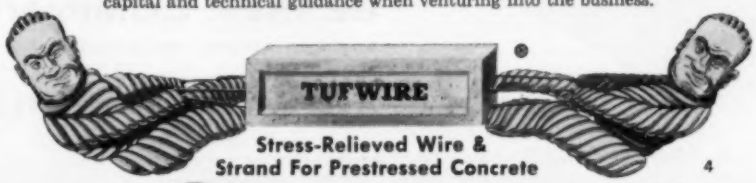
A. Even in marine construction or in construction subjected to other extreme corrosive conditions, the cost of maintenance on prestressed concrete construction ranges from nil to the expense involved in painting in cases where color is desired.

11. Widely Competitive

A. The initial cost of prestressed concrete is such as to enable its prefabricators to successfully bid against the permanent, fire resistant, all-weather types of construction in many types of structures.

B. When the collateral economies effected by prestressed concrete, such as greater and more flexible strength for longer spans and fewer columns, balanced stresses and strains and controlled deflection, thinner sections, lower depth to span ratios, lower wall heights and increased usable cubage, ready availability, speedier erection, negligible maintenance and lower insurance premiums are considered, then the competitive edge is definitely on the side of prestressed concrete for a growing list of structures.

So goes the summary of the thoughts of a panel of pioneers except for a warning which was sounded: Be sure of adequate capital and technical guidance when venturing into the business.



Stress-Relieved Wire &
Strand For Prestressed Concrete

4

union Wire Rope corporation

Specialists in high-carbon wire, wire rope, braided wire fabric, stress-relieved wire and strand.

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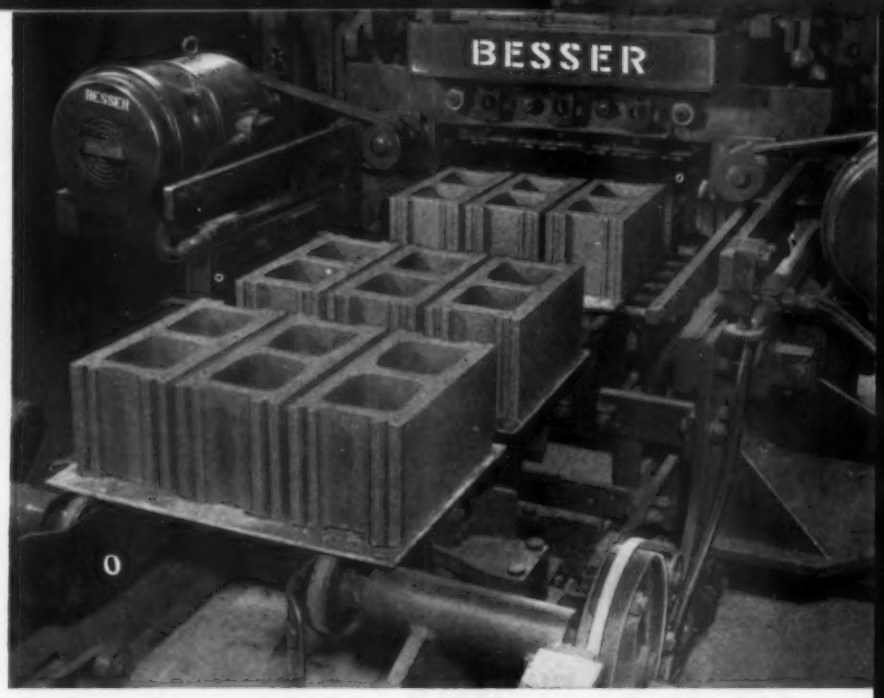
Like peas in a pod...



All block made on the Besser Vibrapac are UNIFORM!

• When you push the starting button of a Vibrapac machine, you have the assurance that all block produced have uniform characteristics. *Like peas in a pod*, all units are identically the same.

The Besser Automatic Feed Control compensates for all conditions of feed—too much, too little, too wet, too dry. Feeding by guess is eliminated. The amount of feed is automatically regulated between each forward motion of the feed box, in ⅛″ increments, up or down. That means each block will have an unvarying modular height, uniform texture and desired density.

For beauty, uniformity and long lasting qualities, Vibrapac Block are "tops" in the industry . . . the preferred building material for all types of structures. Write for literature.

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FIRST IN CONCRETE BLOCK MACHINES

BEAUTY, PLUS PERMANENCE
Examine a Vibrapac Block wall closely. Note the uniform texture, the clean-cut permanent edges and smart tooling of the mortar joints. A Vibrapac Block wall adds beauty and utility to conventional architecture.

BESSER
VIBRAPAC

A 6-108-1PBC

News of the Concrete Industries

Death of Louis Gelbman, Concrete Products Pioneer Loss to Entire Industry

Louis Gelbman, a pioneer in the concrete products industry and the inventor of the basic "vibration under pressure" method of manufacturing concrete units, died in Yonkers, N. Y., on February 15. Mr. Gelbman was 64 years old.

Mr. Gelbman had been associated with the concrete products industry for many years. He started his own concrete block plant in 1920, and was at the time of his death the president of Gelbman Incorporated, Pelham Manor, N. Y.

During World War I he built concrete barges and ships for the U. S. Navy and during World War II manufactured heavy weight concrete ship ballast for the Navy.

He was awarded a Marshall Plan citation for technical aid to Europe. He also received a Navy "E" for his work during World War II.

Mr. Gelbman held many patents on concrete products, methods of using concrete, concrete products equipment, and other items related to the industry.

At the time of his death Mr. Gelbman was building a plant for the manufacture of lightweight concrete aggregates on an automatic machine of his own design.

His sons, Martin and Lawrence Gelbman, are associated with the Expanded Aggregates Corporation, New York, N. Y.

Intrusion-Prepakt Joins Concrete Fabricators, Inc.

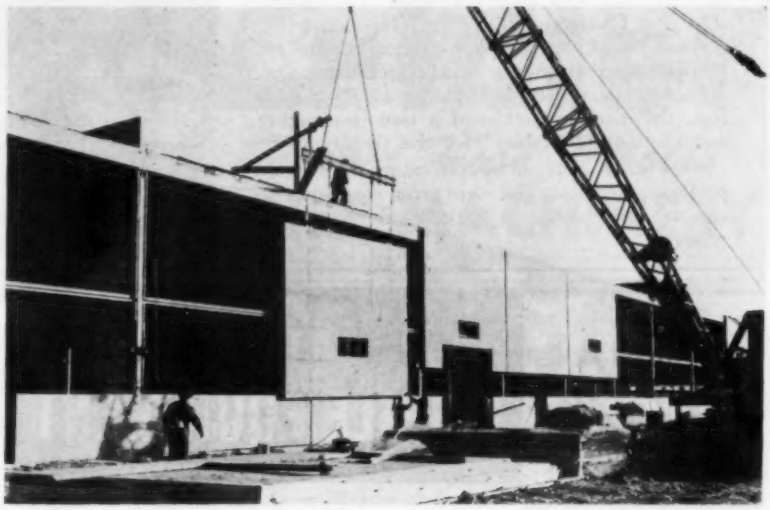
Officials of Intrusion-Prepakt, Inc., Cleveland, Ohio, have announced the affiliation of this firm with a new organization, Concrete Fabricators, Inc. John A. Bader is in charge of operations.

This new concern will manufacture, sell, and install prestressed concrete bridge beams. The plant, located at Crestline, Ohio, will be under the management of Mered McKinzie.

Virginia Prestressing Firm To Construct Second Plant

The Virginia Prestressed Concrete Corporation, Cambria, Va., has purchased 6.78 acres of land in Roanoke County, near Starkey, as the site of a proposed $125,000 plant for the production of prestressed concrete beams.

According to William Carter, president, the new facility will be twice the size of the firm's Cambria plant and will turn out a larger variety of prestressed beams.



• Precast wall panels, completely insulated, are lifted into position ready to be bolted to the steel frame of the building. The National Metal Edge Box Company's manufacturing plant now under construction in Barrington, N. J., is the first building in the area to feature this new type of construction.

Coming Events

April 8-10, 1957—Dallas. 51st annual convention, Autoclave Building Products Association. Statler Hilton Hotel.

April 12-19, 1957—Galveston. Third annual joint convention, Texas Ready Mixed Concrete Association and Texas Aggregates Association. Hotel Galvez.

July 29-August 2, 1957—San Francisco. World Conference on prestressed concrete. Fairmont Hotel.

August 25-31, 1957—Murray Bay, Canada. Semi-annual directors' meeting, National Ready Mixed Concrete Association. Manoir Richelieu.

Camp-Blox Inc. of Columbus Now Producing Split Block

Split block, a concrete masonry unit which has been sheared to expose the color of its aggregates, is now being produced in Columbus by Camp-Blox Inc.

According to Braxton Collins, sales representative, these units are made by fracturing a solid concrete block with a device similar to a guillotine. Units may be broken to any desired size up to 6 in. in height and 16 in. in length.

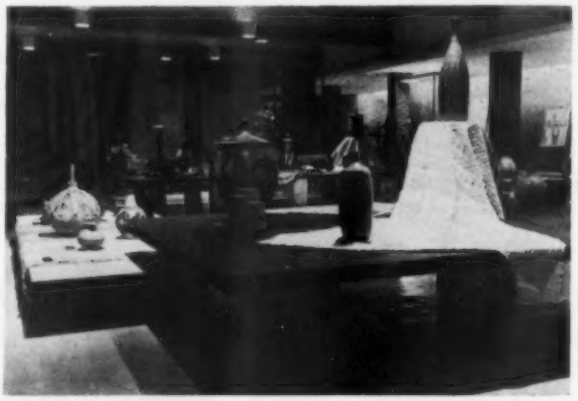
A wide range of color combinations is made possible by varying block aggregates and adding different integral colorings to the matrix. The method of shearing also provides texture variations.

Having the durability of quarried stone, split block can be used as solid masonry, veneer, or a solid wall, and is said to be adaptable to interior and exterior surfaces.

Richard W. Booth, Nutley, N. J., was elected president of the New Jersey Concrete Association at its annual meeting. Mr. Booth has been connected with the Essay County Highway Department for 35 years, and is at present the supervising engineer in the testing laboratory, as well as chief of construction work.

This attractive display was arranged by the Midland (Mich.) Art Association with approximately 150 8- by 8- by 8-in. all-purpose half blocks borrowed from the Whitman Block Company. Confronted on short notice with the task of furnishing a room displaying a "Craftsmanship in a Changing World" exhibit calling for several broad, low display platforms, the art group appealed to the local block company. Using the borrowed half-blocks as supporting legs, the members achieved a most interesting arrangement of "tables" for the display.

The units supplied by Whitman were made on Besser machines and were given three smooth surfaces and a fourth marked only by a sash groove.



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New Lightweight Aggregate Production for N. Y. Market

Production of Aglite, expanded-clay lightweight aggregate for concrete, will begin on schedule when the initial unit of the Sayre & Fisher Brick Company four-plant project commences operation early in April at Sayreville, N. J.

Designed by Frank R. Leftwich, president, this first Aglite unit is the largest and most modern of its kind, having a daily capacity of 1,500 cu. yd. Work on a second (identical) unit will commence in June, and the completed plant will be in operation this fall, bringing daily production up to 3,000 cu. yd. Lightweight concrete aggregate has hitherto been unavailable in the New York Metropolitan area except under heavy transportation penalties.

Spokesmen of Aglite Corporation of America, a wholly-owned subsidiary of Sayre & Fisher, have announced that they expect to erect and license several plants of varying capacities.

Mississippi Ready-Mix Firm To Build Prestressing Plants

The Jackson Ready-Mix Concrete Corporation, Jackson, Miss., plans a multimillion-dollar expansion program to establish prestressed concrete plants in six Mississippi cities.

W. H. Day, president of the firm, stated that the plants will be constructed in Natchez, Meridian, Greenville, Gulfport, Batesville, and Corinth. The company's Jackson plant is the only prestressed concrete producer in the state at present.

Mr. Day also announced the proposed construction of a lightweight aggregate plant north of Jackson.

Florida ranked first in the United States during 1955 for concrete masonry production. Producers turned out more than 280,000,000 units.

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PIPE MACHINERY

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- **ACCURATE DIMENSION PIPE . . .** "Machined-accurate" dimensions to pass the most rigid specifications.
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Seldom do you find a piece of machinery that combines the strength, durability and dependability of a WORKhorse with the speed and mobility of a RACEhorse. But that's what ready-mix operators are saying about the new Rocket "65"—a versatile 6½ to 7 yard mixer. The Rocket is designed and engineered to operate for years at maximum efficiency, with surprisingly little maintenance. Every conceivable ease-of-operation feature, *plus* tremendous strength, has been *built in*.

After you've bought a Rocket, you'll agree that it is both the workhorse *and* racehorse of your fleet!

Also available in 3, 3½, 4, 4½, 5, 5½, 6 and 6½ yd. models.

ALL THESE FEATURES *at* NO EXTRA COST!

HYDRAULIC CHUTE CONTROL Is fully automatic. Controls grouped for easy access.

ALUMINUM EXTENSION CHUTE attaches to 36" fold-over addition to main chute. Total discharge chute: 12' 6".

ELECTRIC REVOLUTION COUNTER kit included; you can handle most specifications with the Rocket!

SPECIAL ALLOY, abrasion resisting steel used at all wear points.

UNOBSTRUCTED HOPPER, for rapid charging, no spilling or waste.

POSITIVE CHAIN DRIVE, flexible power, not affected by truck twist, road shock.

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THREE-POINT SUSPENSION, one-piece cast steel precision machined ring.

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Ohio Concern to Construct Prestressed Products Plant

The Carbon Structural Concrete Company, a recently-incorporated, wholly-owned subsidiary of the Carbon Limestone Company, Youngstown, Ohio, is constructing a $300,000 plant in Austintown Township for the manufacture of concrete products.

According to F. B. Thacher, chairman of the board of Carbon Limestone, the new firm will make prestressed items for all types of building units, specializing in floor and roof trusses and columns particularly adapted to large building and bridge work.

The plant is scheduled to be in operation late this summer or early in the fall. Initial construction includes 450-ft. casting beds, overhead cranes, a concrete mixing plant, and shops and offices. Extensive additions are to be made later.

The technical designs are produced under a franchise of Leap Concrete, Inc., Lakeland, Fla.

Two Virginia R.M.C. Firms Merge to Form New Concern

A merger of the Transit Mixed Concrete Corporation and the Ready Mixed Concrete Company, Ltd., Staunton, Va., has been announced by officials of the new organization.

L. S. Ranhorne is president of the new firm; J. Aubrey Potter Jr. is vice-president; Harold W. Burns is secretary-treasurer; and John Moxie is vice-president in charge of plant operations.

On March 4, 5, and 6 and 11, 12, and 13 several 2-hour conferences on structural design of reinforced concrete shells were held at Atlanta, Ga. These were sponsored by the American Concrete Institute and the Portland Cement Association.

One of the newest industries of La Grange, Tex., is the ready-mixed concrete plant erected by C. C. Palmer Sr. and C. C. Palmer Jr., who have headquarters at Cuero, Tex. This firm also operates a plant at Hallettsville, Tex.

Operation was scheduled to begin this month at the Cementick Tile Company's plant in East Liverpool, Ohio. This corporation will manufacture pressed concrete tile flooring. Myron Weis and Emmett Peterson are the owners of the business.

ELECTRONIC MARK X H_2O METER

the SURE WAY . . . to accurate determination of sand moisture

- CONTINUOUS DIRECT READING
- INDISPENSABLE FOR READY MIX INVALUABLE FOR BLOCK PRODUCERS
- SMALL COMPACT DESIGN
- SIMPLE INSTALLATION NO SKILL REQUIRED
- $178 DELIVERED ANYWHERE IN THE UNITED STATES

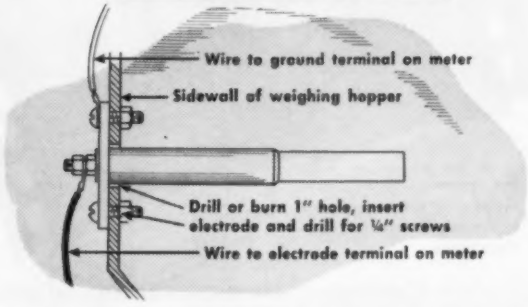
No more "road blocks" between the concrete producer and RELIABLE data on sand moisture content!

Employing the most advanced engineering ever offered in a moisture meter at any price, the Mark X H_2O Meter uses the field proven alternating current bridge in its measuring circuit.

Guaranteed accurate and maintenance free, the Mark X insures controlled uniform concrete — offers profit protection for the producer, and product satisfaction for the customer!

Install this useful tool and you're on the "open road" to production of controlled concrete and premium concrete products!

"THE STANDARD OF THE CONCRETE INDUSTRY"


Wire to ground terminal on meter
Sidewall of weighing hopper
Drill or burn 1" hole, insert electrode and drill for ¼" screws
Wire to electrode terminal on meter

Install electrode as above. Locate in position where it will be covered by sand when batching. Locate meter anyplace convenient to the batcher's hand and view. Plug cord into 110 volt outlet — the job is done.

All installation materials and detailed instructions included with shipment.

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The concrete industry's new sound color movie dedicated exclusively to materials handling ideas.

This is a 17-minute movie in color and sound, which your Hyster Dealer will arrange to show you. The film *shows* many time and money-saving handling techniques used by concrete manufacturers to reduce costs (and increase profits).

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Conference on Concrete Held at U. of Missouri Features Better Product

A conference sponsored by the Department of Civil Engineering of the Missouri School of Mines, in cooperation with the Portland Cement Association, was held on the campus of the University of Missouri, Rolla, Mo., on March 8 and 9. Ten papers were presented by various authoritative speakers, who presented ways of obtaining better concrete. The program also included three films, covering the concrete masonry story, construction of airfield pavements, and inspection practices in the field and laboratory.

Carl Menzel, consultant on concrete technical problems, P.C.A., Chicago, presented a paper on *Recent Developments in Manufacture and Use of Concrete Masonry,* in which he reviewed several current investigations on the behavior of concrete units under high-pressure steam curing, and of causes for shrinkage cracking of walls.

A paper describing trends toward future design of plain, reinforced and prestressed concrete pavements was presented by Paul F. Carlton, U. S. Corps of Engineers, Cincinnati, Ohio. Other papers covered the federal highway program, physical properties of concrete at early ages, and the use of a rebound hammer in determining sompressive strength of concrete. Modern equipment used in producing and placing concrete was discussed by J. E. Chadwick, Koehring Company, Milwaukee, Wis.

National Precast Concrete Offers Lightweight Roof Tile

In Beaumont, Tex., a new lightweight concrete roofing tile is being produced at the National Precast Concrete Company, Inc. The product is manufactured under a franchise agreement.

According to Sam Turner, president of the firm, the waterproof tile is made in six colors—gray, red, pink, gold, green, and brown. Units are shaped with tongue-and-groove joints which lock into one another.

Crown Stone, a facing brick made of concrete will be made by National Precast to match the roofing tile. The firm is continuing its lines of precast steps and cast stone.

R. E. Francis, president of Reading Concrete Products, Inc., Covington, Ky., has been elected a trustee of the Ohio Concrete Block Association. Mr. Francis was the organization's first president in 1953.

KENTHREE

PLAIN PALLET MACHINE with FRONT PALLET RETURN-

A Compact, Highly, Efficient Machine Incorporating Every Modern Technique.

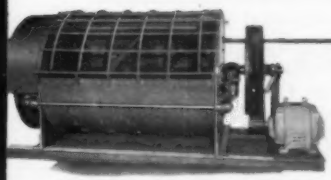
The amount of material, the time of agitation and vibration, accuracy as to size of the blocks, the forward movement of finished blocks, are all controlled electronically and hydraulically.

Electrically controlled hydraulic cylinders permit simplification of design with a sizable reduction in cost of production.

A magnetic spade permits the offbearer to pick up two pallets with three blocks on each and simultaneously drop two empty pallets, one of which immediately moves into position at each cycle.

The KENTWIN automatically produces three 8-inch blocks or equivalent at each cycle made from any aggregate.

Furthermore, because of its simplicity it is possible to price this machine attractively. See it by all means or write for descriptive literature.



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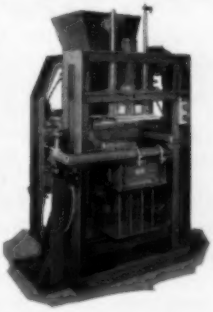
incorporating many features that assure efficient operation, large output and long life.

Capacities—12 to 75 cu. ft. per batch.



KENT BLOCKMAKER

A fast, semi-automatic machine that is relatively low in purchase price and cost of operation.

Economically provides high quality, single cored blocks.

KENT LINTELATOR

A machine that can help you expand your sales and profits through the production of concrete lintels, which are being more and more widely adapted because they are more satisfactory and less costly than steel members.

SEE THESE MACHINES

IN OPERATION RIGHT IN YOUR OWN OFFICE

Just Ask Our Representative to Bring His MOVIE PROJECTOR

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CUYAHOGA FALLS, OHIO • *Division of The Lamson & Sessions Company*

Concrete Products Machinery Since 1925 **Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario**

Of Plants and People

A. J. Martin, owner of the Olathe Ready-Mix Concrete Company, Olathe, Kans., has purchased the controlling interest in the Jayhawk Ready-Mix Concrete plant at Bonner Springs. The plant will operate under its original name as a division of the Olathe firm.

Transit Ready-Mix, Inc., a new corporation composed of a group of Nashville, Tenn., businessmen, has purchased the Nashville Ready Mix Company, Inc., which operates two mixing plants. According to Fleming Smith, president of Transit Ready-Mix, plans call for the expansion of both facilities.

First industry of its kind in the Buena Park, Calif., area is the ready-mix plant recently established by Eric and Louis Rushing, Frank Ramsey, and John Thomas. This concern will do business under the name of the Buena Park Ready Mixed Concrete Company. Mr. Thomas, sales manager, who has been in the ready-mix business for 12 years, stated that access to the Santa Ana Freeway and booming construction were the main reasons for the location at Buena Park.

James W. Rider of Cynthiana, Ky., recently purchased the Cynthiana Concrete Products Company from W. W. and John Owsley and Kenneth and Robert Frye, the former owners. Operation of the plant will continue at the present site and under the same name.

The Dousman Concrete Products Company, Dousman, Wis., has recently gone into operation, manufacturing conventional concrete and lightweight blocks, and a complete line of masonry supplies. Joseph Uehlman is president of the firm, and Lawrence Christiansen is vice-president.

Gulf Ready-Mix, Inc., Naples, Fla., recently went into operation, producing ready-mixed concrete and allied products. Harold Robitaille is president of the firm. Associated with him in the new venture are Mrs. Robitaille, Harold Brown, and John Harley.

Officials of the Ferro Concrete Construction Company, Cincinnati, Ohio, have announced the opening of their new offices in the Gwynne Building, 602 Main Street. Ferro, founded in 1902, was a pioneer in the field of reinforced concrete. In 1903 the firm completed the Ingalls building, one of the highest concrete structures in the world at the time.

J. J. Ruten was recently named first vice-president of the Watertown Cement Products Company, Watertown, S. D. Mr. Rutten, general manager of the firm since 1955, previously had been owner of the Osakis Concrete Products Company, Osakis, Minn. Ed Esser is president of Watertown Cement, and Harvey Werner is secretary-treasurer.

The Building Research Institute's sixth annual meeting will be held April 15-17 in Chicago. A meeting and a dinner of the board of governors are scheduled for the first day. Technical sessions will follow on the 16th and 17th.

Discussions will include topics on multi-family dwellings, fire protection, weatherproofing and the economics of building. The technical program will feature the latest developments in the field.

North Star Concrete Company Adding Facility in Rochester

Rochester, Minn., is the location of a new plant under construction on a 40-acre site for the North Star Concrete Company. Other facilities of the firm will undergo improvements and changes during this year.

North Star, founded in 1901, operates a concrete pipe manufacturing plant in Minneapolis; a ready-mix plant at St. Peter; a sand and gravel plant, a ready-mix plant, and a concrete products installation at Mankato; and a concrete drain tile and building block plant at Elmore. All are located in Minnesota. Headquarters are in Mankato.

Needham, Johnson Promoted To Marietta Concrete Posts

Two appointments were announced recently by officials of the Marietta Concrete Corporation of Tennessee at Nashville. Fred U. Needham has been named general manager in Nashville, and Robert D. Johnson assistant to the executive vice-president at Marietta, Ga.

Both men joined Marietta in 1954, when the firm acquired the Concrete Manufacturing Company of Nashville. Mr. Johnson has been manager and Mr. Needham manager of the silo division.

"D-Load" Design Method Wins Approvals of A.S.T.M.

According to the American Concrete Institute *Journal*, the "D-load" method of design and classification of load on reinforced concrete pipe has been accepted by the American Society for Testing Materials Committee C-13 on Concrete Pipe. It is planned to submit the method at the annual meeting of A.S.T.M. in June for inclusion in Specification for Reinforced Concrete Sewer Pipe (C75) and Reinforced Concrete Culvert Pipe (C76). The revised specification will carry the designation C76, and Specification C75 will be discontinued.

There are two types of D-load for three-edge bearing test in the revised specification. The "D-load 0.01-in. crack" is the load per lineal foot of pipe per foot of diameter to produce the 0.01-in. crack. "D-Load ultimate" is the load per lineal foot of pipe per foot of diameter to produce ultimate failure. The new specification is designed for both types of D-loads, whichever is desired by the buyer. Tables permit a choice among pipe designed to withstand five degrees of loadings.

Use

STEEL FLEX

ALL METAL *Flexible*

CABLE CASING

For Armoring Post Tension Reinforcing Assemblies

Available in continuous lengths to 120 feet fully extended. GROUTING INLET CONNECTIONS as illustrated located to your specifications.

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De Pasquale Bros.' Mack B-42 tractors haul the massive concrete products in trailers from plant to job site, travelling on- and off-highway. Their 10-yard dumpers deliver gravel, while mixers are used to pick up special concrete batches for delivery to the plant.

because concrete products make rugged hauling...

De Pasquale Bros. relies on Macks

Mack B-42's handle the entire hauling needs of one of the East's largest independent suppliers of concrete pipe and concrete specialties. President Eugene De Pasquale, Sr., of De Pasquale Bros., New Hyde Park, N. Y., is convinced that it would take many more trucks of any other make to keep up with his operation.

"I've seen our Macks work against even larger trucks on the same kind of job," he says. "Macks turn in the best day's work every time.

"And that's only part of it. We've had our Macks over a year and a half, and every last one of them has been on the go all day long, every working day. Yet there hasn't been a breakdown or major repair job on any of them. And it's not only the front office that likes Macks; you ought to hear our drivers on the subject. I'm afraid they're spoiled for anything less than a Mack."

Best of the many Mack features valuable to operation, Mr. De Pasquale believes, are the durable, precision-built transmissions. "They're engineered *right*," he says. "And so is the whole truck, for that matter. Macks have been a big boost to our company in every single way."

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● More and more concrete-block producers are turning to the tow-along fork-lift method of loading, delivering, and unloading units at the job. The accompanying picture shows a semi-trailer being loaded with cubed units in the yard of San Xavier Materials Co., Tucson, Ariz., with the fork-lift attached. It is trailed to the job, then unhitched and used to unload the cubes and set them out at convenient points for the masons. Both fork-lift units shown are manufactured by Champ Corp., El Monte, Calif.

San Xavier is one of the largest producers of concrete blocks, sand and gravel, and ready-mix in the Southwest. Five Besser machines are used in the block plant.

N. Carolina, N. Mex. Plants Install Outsize Autoclaves

At Kinston, N. C., interested spectators recently saw a 108-ft. long autoclave arrive by rail. It had been ordered by the Smith Concrete Products Company. The big steel tube was the first such equipment ever put in place in eastern North Carolina. It is a part of a $250,000 expansion and modernization program initiated by the concrete products concern.

This autoclave weighs approximately 80 tons; its door alone weighs 6,000 lb. Inside diameter is 10 ft. The device was designed and constructed to withstand 1,000-ton pressure during the curing cycle.

A few days later, according to word from Albuquerque, N. M., a similar autoclave 120 ft. long was received in that city, destined for the plant of the Lavalite Concrete Products Company. Three flatcars were required for the big member. Weighing 90 tons, this autoclave is also 10 ft. in diameter. Its capacity is 11,000 concrete units. It was reportedly the largest ever installed in New Mexico.

The huge cylinder was made to the specifications of Lavalite by the McNamar Tank Company, Tulsa, Okla.

Springdale, Ark., is the site of a new business venture, the concrete products plant of H. L. Pelton and his son, H. L. Pelton Jr. This facility turns out Colorbrik in 16 colors. Other products are Brikcrete, Brikrok, and Terracrete.

In Warren, Ariz., Dave Strickalnd and Rece Maddux recently purchased the ready-mixed concrete facilities of the Warren Construction Company, formerly operated by Norman Busk and Lloyd Coon. The new owners will do business under the name of Warren Redi-Mix.

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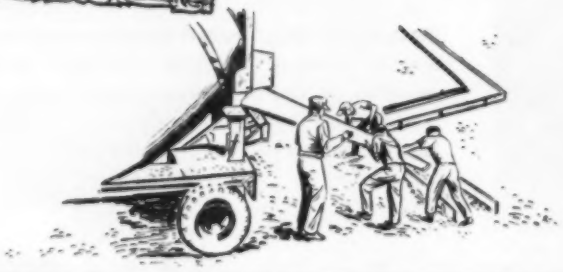

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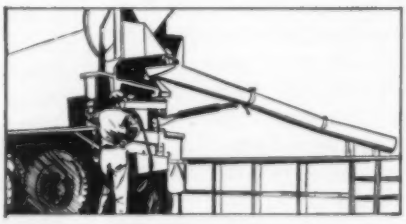

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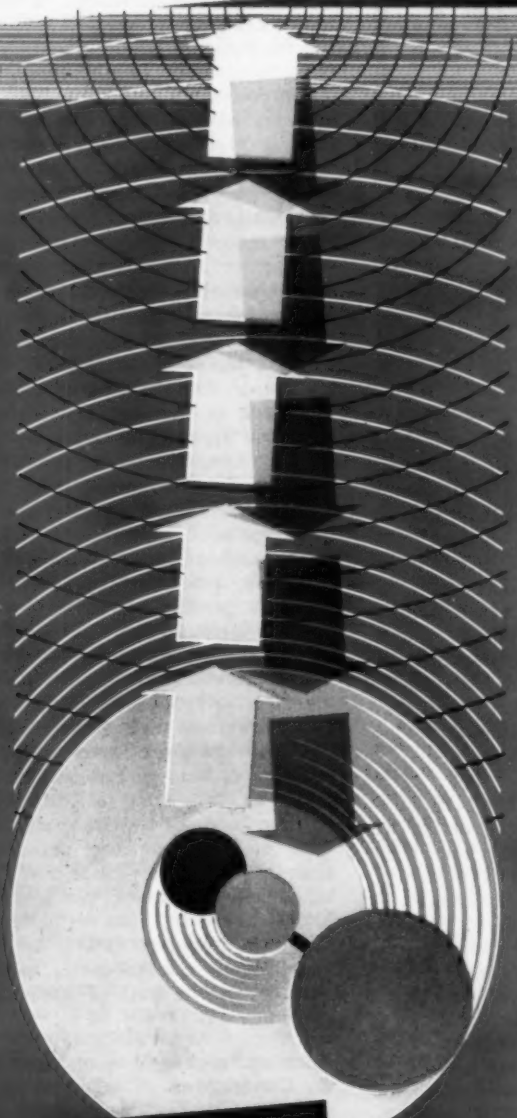

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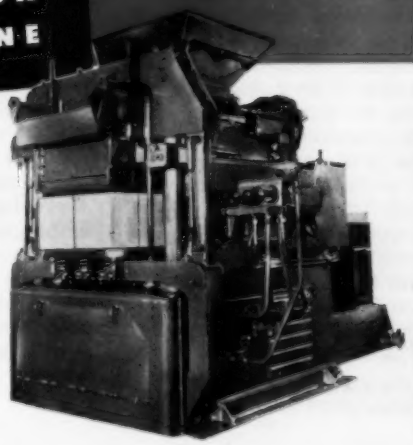

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Rx Ready Mix

By HARRY F. THOMSON
Consulting Engineer, St. Louis, Mo.

Evaluation of Test Reports

The following paragraph from the introductory statement (with minor condensation) in a recent report by a committee of the American Concrete Institute on "Recommended Practice for Evaluation of Compression Tests of Field Concrete"* merits thoughtful consideration by producers who undertake to furnish quality concrete.

"The primary function of compression tests of field concrete is to insure production of desired strength and quality. . . In addition to variations which exist in concrete itself (due to variations in characteristics of ingredients and practices in proportioning, mixing, transporting, placing, and curing) strength variations will also be introduced in fabrication, curing, and testing of test specimens. Variations in the strength of concrete must be accepted; but consistent concrete of adequate quality can be produced with confidence if proper control is maintained, test results are properly interpreted, and limitations are considered."

Expressed briefly, this statement affirms that tests, properly made, are necessary in evaluating the quality of a concrete.

Sources of Variation Variations in the strength of concrete strength specimens can be traced to two sources, which can be summarized as:

(a) Variations in properties of concrete: Changes in water content due to poor control; variation in water requirements due to non-uniformity of materials; characteristics and properties of ingredients; variations in transporting, and placings; and variations in temperature and curing.

(b) Discrepancies in testing: Poor sampling procedures; non-uniform molding, i.e., compaction and care of fresh cylinders; changes in curing in temperature and moisture; and poor testing procedures, i.e., capping and compression tests.

Standard Test Methods The A. S. T. M. prescribed standard methods for sampling, molding, curing, and testing specimens have been outlined in previous articles in this column.* As almost any deviation from these standard procedures will result in an indicated strength which is lower than would be developed under strict adherence to the standards, it is desirable that a producer check carefully as to whether each step in handling test specimens of his concrete is performed correctly.

Who Buys Testing? If a commercial laboratory is to make the tests, it may have been employed by one of three parties, the owner of the construction as represented by the architect or engineer, by the general or concrete contractor, or by the concrete producer. In any case the producer is intimately concerned that his concrete is judged correctly; accordingly he is justified in familiarizing himself or having a representative thoroughly familiar with the details of the standard procedures, and then insuring that the laboratory personnel follow those procedures meticulously. If standard procedures are not followed accurately he would be protecting his operation if he called such discrepancies to the attention of the laboratory executive, and if necessary, also to the owner or the contractor, or whoever employs the laboratory.

Unfortunately many agencies concerned with construction are not sufficiently familiar with test procedures for concrete to judge adequately the correctness of the testing work. An excellent booklet which discusses and interprets the A.S.T.M. Standards which are of particular interest in this connection is entitled "Sampling and Testing Ready-Mixed Concrete," identified as Publ. No. 66, National Ready Mixed Concrete Association. This booklet, and the preceding publications No. 29 and 47, have been distributed by many producers and other construction agencies as an instructive service. These booklets have proven to be helpful references in case of arguments.

Commercial Laboratories The conduct of a commercial testing laboratory is of course a business, and as such, it is understood that the expense of handling and testing specimens should be within the revenue earned by the service. Many laboratories do an excellent job in complying with the details of the standards, and are to be commended. However, there are some which are almost slip-shod as to details, and thereby may fail to credit a producer's concrete with the full strength it should develop under standard test conditions. When a laboratory undertakes to make a test it is presumably under obligation to perform all steps in accordance with recognized good practices, which are those spelled out in the A.S.T.M. standards. If the price charged does not permit employment of fully competent personnel, then the laboratory should try to make equitable arrangements or not undertake the test. But certainly the concrete producer should not be penalized by carelessness or incompetence on the part of laboratory personnel.

Testing Purchased By Contractor Some mention might be made regarding the prevalent practice of specifications for important work requiring that the contractor pay for test reports. The contractor naturally buys testing service at as low cost as may be available. If he employs a service which is not meticulous in following standard procedures, he is not penalized, but the concrete producer may be. A more logical arrangement would appear to be the employment of the laboratory by the owner or his representative, say the architect or engineer. Then if there are questionable test results the matter can be handled directly with the owner instead of through the con-

*Journal of American Concrete Institute, Dec., 1956.

*Concrete Manufacturer, July, 1954, and February, 1957

tractor, who stands in the position of a third party. This is not a novel thought, as it has been proposed in many quarters, but has seldom been applied. As such arrangement may offer a possible improvement in relations, it might be urged by producers whenever the opportunity occurs.

Producer's Interest The self-interest of each producer justifies his assuring himself that each step in the testing routine is performed correctly as to such details as seeing that cylinder molds are non-absorbent; representative samples are obtained; molds are filled by thirds and each layer is rodded 25 times; specimens are placed where they are safe from being moved or disturbed, and are protected from cold and heat; and that cylinders are transferred to the laboratory after 24 hours, removed from the molds, properly capped, and placed under 100 percent humidity and 73 deg. F. temperature until 24 hr. prior to being tested. The procedure in the laboratory, and the condition of the compression machine, may not be easily checked, but a reputable laboratory should welcome reasonable inspection by interested parties. A little interest shown by a producer in the handling of specimens of his concrete may spur the laboratory personnel to give proper care to all details of the standards.

Standard Curing Often Violated The item which is probably the most frequent cause of error in the sampling and curing procedure is the failure to place the specimens under moist curing conditions at the end of 24 hours after molding. If the laboratory was employed to mold, cure, and test the cylinders, then in compliance with the standard method, it is their obligation to see that the specimens are transferred to the laboratory, stripped, capped, and placed in damp storage at 73 deg. F. on the day after the molding. Cylinders left on the job for more than one day will probably develop less than the proper strengths at both 7 and 28 days. If left on the job for 6 days before reaching the laboratory, the deficiency in strength may be substantial, possibly 10 to 20 percent at 7 days, and 5 to 10 percent at 28 days. The reputation of the concrete producer may suffer to that extent.

In the larger municipal areas, where the job may be some miles from the laboratory, there is too frequently no iron-clad arrangement for cylinders to be picked up on the second day; they may remain on the job, exposed to variations in temperature, until a representative is in the vicinity, and it is found convenient to bring in the cylinders. Another difficulty occurs with cylinders cast on a Friday, which should not be left on the job until the following Monday. Full performance by a laboratory would appear to require that arrangements be made for personnel to attend to what is needed to be done on Saturday; and likewise for servicing on Sunday any specimens cast on Saturday.

The fault for tardy transfer of test cylinders does not always rest with the laboratory. If the sampling and molding are done by a representative of the general or concrete contractor, then the obligation of delivering the specimens to the laboratory on the following day would appear to rest with the job organization. Too frequently the cylinders remain on the job until someone is "driving downtown" and can take them along. Unfortunately too many superintendents do not understand the second day requirement for a correct test, and are under the impression that arrival at the laboratory any time within seven days is equally satisfactory. If a producer observes that specimens of his concrete are not reaching the laboratory promptly or are then not handled properly, it would appear that he is fully justified in calling the attention of all parties concerned to the effect of such delays. Possibly citing the explanations given in N.R.M.C.A. Publ. No. 66, as mentioned above, would be helpful in informing those concerned as to the requirements of correct procedure.

Reports Should Include History Most laboratory reports of compression tests would be better bases for evaluating the strength observed if they contained a history of the specimen prior to reaching the laboratory. The history might include such items as the name of the person who made the cylinder, how it was protected while on the job, and the reason why it was not transferred to standard curing on the second day, if that was the case. The report might well include a statement that the specimen was molded, cured, and tested in accordance with the applicable A.S.T.M. standards, or wherein the procedure differed from standard.

Most reports give the dates on which the cylinders were cast and were received at the laboratory; if the interval was longer than one day, the possible treatment of the cylinders during that time is left to the imagination. If the cylinders were molded and transferred by other than laboratory personnel, and no information as to treatment was furnished the laboratory, then the report might state "no information." This would be sufficient to cause interested parties to investigate immediately in case of indicated low strength, instead of passing the onus of poor strength to the concrete producer. The architect or engineer may not be fully aware of the injurious effect of long standing on the job, especially if exposed to hot sun.

Some laboratories take the position that they are employed only to cure and test the cylinder as received, and have no further obligation. When requested to include in the report such history as suggested above or a statement of "no information," such laboratories may be either reluctant or flatly refuse to do so, offering the alibi that an explanation might imply criticism of inadequate performance by someone whom they do not wish to antagonize. In many such instances the explanation by the concrete producer, that the several days standing in air on the job contributed to the indicated low strength, is simply brushed aside and he is left "holding the bag" for poor concrete, when actually not the concrete, but nonstandard handling of the specimen, was the fault, abetted by incomplete information.

Typical Incorrect Procedures Without any intention of indicting the inspection and testing fraternity, the following typical experiences with incorrect procedures are cited, as indicating there is need for tightening of practices in many quarters, so that test results may be viewed with greater confidence. These experiences of incorrect inspecting and testing are typical of matters to be watched by a ready-mix producer, to insure that his concrete is evaluated properly:

1. A report on the strength of concrete in a certain pour on a factory construction was so far below previous tests that the out-of-town architect questioned the reliability of the ready-mix producer. After extensive checking the producer concluded there was something amiss in the laboratory's work. Under inten-

sive questioning the inspector who made the cylinders admitted that as he did not reach the job until after all concrete had been placed in a wall, he scooped a sample from the top of the wall, including laitance, water-gain and some very wet concrete, and filled three molds. No explanation to this effect appeared in the report, which placed the producer under a cloud until he could prove that the sample was not representative of the concrete as delivered.

2. A 7-day report on cylinders delivered to the laboratory by a contractor showed they had been received only the day before being tested. The design engineer promptly complained to the ready-mix producer that the concrete must have been deficient because the strength was not up to expectations. When the circumstance of the specimen being on the job for six days was pointed out to the engineer, he still was not satisfied. The laboratory was not helpful, as they would not endorse the statement of the producer regarding the damaging effect of long exposure on the job; they stated that they tested cylinders as received and were not responsible for any earlier circumstances. Fortunately, the 28-day strengths met the specifications, but were considerably below the safety factor intended in the concrete design.

3. On a school job involving government money the 28-day strength of foundation concrete placed in the fall was reported as 800 p.s.i. The inspector ordered the foundation removed. The contractor protested and offered to have a chunk removed from the wall, cured, and tested. After two men chipped on the wall for two days without breaking out a square-foot section, the inspector admitted the concrete in place was satisfactory. Subsequent examination of the crushed cylinders showed clear evidence of ice crystals. But the laboratory report had merely stated the crushing strength, without any explanation of the low break. Even after admitting that the cylinders had frozen, no apology or regrets were expressed.

4. Strength reports on a large job suddenly dropped severely. The laboratory's sampling, and delivery to the curing room, appeared to be correct. Companion sets of cylinders were then made by the producer, one set being sent to the usual laboratory and the other to another laboratory. The report from the first laboratory was again low, but for the second set the report was in line with the expected strength. Examination of the compression machine in the first laboratory revealed that the spherical surface of the head block was corroded, so that the block could not move freely in all directions, causing an eccentric loading on the cylinder being crushed. The laboratory's own supervision should have detected and corrected this fault, which had led to low strengths being reported for a substantial number of cylinders from various jobs.

5. On a railroad job on which concrete strength was specified, the inspector for a laboratory employed by the railroad made specimens by holding the cylinder mold in the stream of concrete delivered by the ready-mix truck, without any rodding, and then jolted the mold on a nearby rail two or three times. When reminded that this was not in accordance with A.S.T.M. procedures, the inspector commented that the cylinders had "received better compaction than the concrete as placed in the job," as if that had any bearing on measurement of the quality of the concrete. When this was reported to the inspector's superior the inspector was promptly instructed to follow standard procedures.

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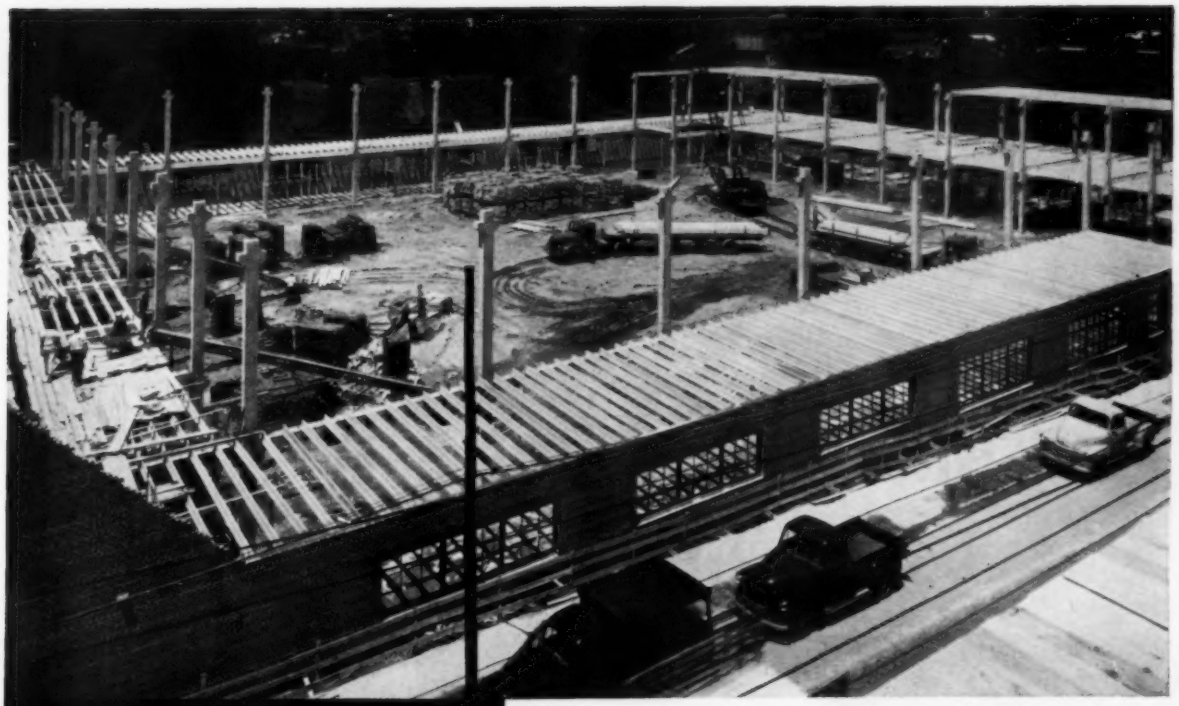
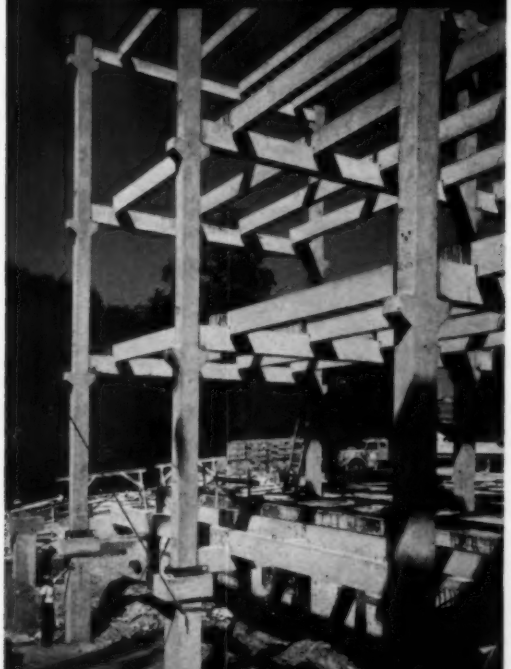


Upper photo: Finishing plant is 196 feet by 296 feet and two stories high.

Lower photo: A portion of the manufacturing plant, 270 feet by 259 feet, which is two, three and four stories high.



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N.R.M.C.A.

27th Annual Meeting Features Timely Program

Crowd Enjoys California Hospitality

Four of N.R.M.C.A. v.i.p.'s (left to right): M. Eugene Sundt, Albuquerque, N. M., vice-president; J. W. Roberts, Richmond, Va., president; Robert Mitchell, Los Angeles, Calif., retiring president; and F. E. Schouweiler, Fort Wayne, Ind., vice-president.

Roger H. Slugg, president, Ohio Ready Mixed Concrete Assn., greets guests at the Ohio Breakfast meeting.

Another ON THE SPOT Report

THE National Ready Mixed Concrete Association, in conjunction with the National Sand and Gravel Association, held its 27th annual convention February 11 to 14, 1957, at the Statler Hotel, Los Angeles, Calif. Attended by some 2,000 ready-mixed concrete and sand and gravel producers and others allied with the industry, the meeting was a record-breaker for a convention without a machinery show. Included in this figure were over 700 wives of those present, who especially enjoyed the bounteous California hospitality over the four-day session. Remarkable co-operation was afforded by all attending the meetings, which were started on time and promptly attended, with courteous attention paid to each speaker. Such features reflect the high appreciation of the audiences for the excellent program and regard for those who planned it, mainly the work of Vincent P. Ahearn, executive secretary, and his most efficient staff.

With one exception, all convention and business sessions were held in the hotel. Each day had simultaneous meetings on subjects of mutual interest to the two groups, as well as separate meetings on matters of peculiar interest to each, which made it necessary for all those present to make decisions as to the meetings which they would prefer to attend. Such an arrangement is unavoidable, considering the scope of subjects covered by the program within the period of four days. By means of advance registration and most efficient handling of registrants as they arrived, little complaint was heard however, and then usually only from those who had disregarded the prior admonitions of the secretary for individual co-operation by those attending the convention.

These joint sessions covered operations of state and area associations,

Above: The distaff side of the efficient association staff (left to right): Mildred Carlin, Mabel Haswell, Jane Kissel, Shirley Hill, Myrtle Strother, Kathryn Ralls, and (seated) Olive Cook.

Right: E. A. Lockett (left), Pasadena, Calif., speaker at the Ohio Breakfast, being greeted by Ralph H. Anderson, Columbus, Ohio.

This group of area or regional association secretaries and others includes (left to right, rear): M. H. Barnum, Antelope Valley Rock & Concrete Assn.; Paul R. Smith, Empire State Sand, Gravel and Ready Mixed Concrete Assn.; H. M. Conrow, Iowa Ready Mixed Concrete Assn.; H. G. Feraud, Southern California Ready Mixed Concrete and Rock Products Associations; Vic E. Baum, Kansas Ready Mixed Concrete Assn.; and Byron P. Weintz, Consolidated Rock Products Co.; front: J. R. Hopkins, Michigan Ready Mixed Concrete Assn.; Claude L. Clark, Ohio Ready Mixed Concrete and Sand and Gravel Associations; Ray L. Cain, Texas Aggregates Assn.; and J. C. Moran, Ready Mixed Concrete Assn. of Metropolitan Pittsburgh.

including the labor negotiations, short courses, and legislative activities carried on by such groups; the import of the new highway program; the business outlook for 1957; public works programs; public relations; cost accounting; depreciation regulations; motor vehicle taxes; calculation of aggregate proportioning; and the annual summation of the two industries by Mr. Ahearn, which has become a feature eagerly looked forward to by members of both associations.

The separate sessions of the N.R.M.C.A. covered such topics as basic insurance problems, the installation and operation of industrial radio, standards for ready mixed concrete, operating problems, disposition of waste concrete, control of dust in batching operations, flexural strength testing, determination of cement content, and cement testing programs.

Officers and Directors Louis C. Schilling, I. E. Schilling Company, Miami, Fla., chairman of the nominating committee, submitted the report on nominations for new officers and directors for 1957. The committee consists of all former presidents of the association who are still active in the industry. The following officers were elected: John W. Roberts (Southern Materials Company, Inc., Richmond, Va.), president; M. Eugene Sundt (Albuquerque Gravel Products Company, Albuquerque, N.M.), vice-president; F. E. Schouweiler (Old Fort Supply Company, Fort Wayne, Ind.), vice-president; and J. V. Donovan (Valentine Concrete Company, Inc., Springfield, Mass.), treasurer. Named to serve on the executive committee with the officers were William J. Hicklin Jr., Jacksonville, Fla.; Harold M. Lacy, Dallas, Tex.; E. J. Nunan, Buffalo, N.Y.; and Raymond F. Powell, St. Louis, Mo.

Elected to the board of directors for a three-year term were J. G. Goodner, Oklahoma City, Okla.; Robert J. Hummel, Chicago, Ill.; Walter M. Keeler, Wichita, Kans.; Elbert F. Lewis, Greensboro, N.C.; Charles P. Maloney Jr., Washington, D.C.; James E. Motheral, Austin, Tex.; Robert M. Mumma, Harrisburg, Pa.; and H. Irving Rhine, San Francisco, Calif.

Coming Conventions The 1958 joint conventions of the N.S.G.A. and the N.R.M.C.A., with their biennial machinery exhibits will be held in Chicago, Ill., February 9 to 13, with meetings at the Conrad Hilton Hotel and exhibits there and at the Coliseum. The 1959 conventions will be held February 15 to 19 at the Roosevelt Hotel, New Orleans, La. The 1960 conventions and exhibits will be in Chicago, probably on February 15 to 18, at the Conrad Hilton Hotel and the Coliseum. The 1961 convention, originally scheduled for the Fairmont Hotel, San Francisco, Calif., February 20 to 23, will be held instead in Miami, Fla. The switch was made because the 1960 directors meeting is to be in California only a few months earlier. The 1963 convention, originally scheduled for Miami, January 14-17, will go to San Francisco. The 1962 joint conventions and exhibits are scheduled for the Conrad Hilton Hotel and the Coliseum, probably February 12 to 16.

The 1957 semi-annual meetings of the two boards of directors will be held August 25 to 31 at the Manoir Richelieu, Murray Bay, Quebec. The 1958 meetings will be at the Sun Valley Lodge, Sun Valley, Idaho, September 17 to 21. The 1959 meetings will be September 27 to 30 at the Lake Placid Club, Lake Placid, N. Y. In 1960 they will go to the Del Monte Lodge, Pebble Beach, Calif., October 3 to 6.

Manufacturers Divisions A joint meeting of the Manufacturers Division of the N.S.G.A. and the Exhibit Division of N.R.M.C.A. was held on Sunday, February 10, preceding the conventions. The N.S.G.A. group re-elected all officers and directors. The officers are: chairman, C. B. Laird (Eagle Iron Works); vice-chairman: D. McM. Blackburn (Hendrick Mfg. Co.), J. C. McLanahan (McLanahan & Stone Corp.), W. A. Rundquist (Pioneer Engineering Works, Inc.), and E. D. Stearns (Barber-Greene Co.). In a brief report Mr. Laird pointed out that nine new members have been added for a total of 92.

There was much discussion of the exhibits to be held at the 1958 conventions in Chicago. The exhibits in the Conrad Hilton Hotel and at the Coliseum will be open from 9:00 a.m. to 5:00 p.m. the first three days and from 9:00 a.m. to 1:00

Robert Mitchell, retiring president, presenting safety awards to J. K. Smith, Anderson Concrete Corporation, Columbus, Ohio, winner in Class A (left), and John D. Kuhns, Kuhns Concrete Company, Springfield, Ohio, winner in Class D (right). Awards were also presented in three other classes.

p.m. on Thursday, the last day. The associations are leaving two afternoons open for visits to the exhibits. The joint meeting of the two manufacturers groups will be held on Monday, February 9. A joint meeting of the two exhibit committees was announced for April 5, 1957 at the Conrad Hilton in Chicago.

Senator Goldwater The speaker at the annual joint luncheon of the two associations was Senator Barry M. Goldwater (Republican) of Arizona, who has had a rapid rise to political prominence. His first office was as a member of the Phoenix city council in 1949 and from there he went direct to the U. S. Senate. He fostered the right-to-work law in Arizona and is now a member of the new special Senate committee to investigate improper practices in labor and management groups. Mr. Goldwater commented on the growing political trend of the labor union heads which is putting too much power in a few hands. The latest cycle of inflation he blamed on the head of the steelworkers' union and on the heads of the big steel companies who gave in to demands without a struggle and then added the cost to their prices. The Senate committee, he said, is making a study which should result in controlling legislation fair to both sides. We are, said Mr. Goldwater, the only really free country on earth, but of the 51 labor union countries we are the only one which has compulsory unionism. Liberty is something we have fought and died for, but we are now letting it slide away.

President's Address In his address as retiring president of the N.R.M.C.A., Robert Mitchell, Consolidated Rock Products Company, Los Angeles, emphasized the service which has been rendered to members, and to the entire industry by the activities of the association during his term of office. He stated that the present membership of 720 companies represents the highest membership in the history of the association, and produces over 75 percent of the ready mixed concrete production in the United States. In addition, its 118 associate members constitute nearly all of the equipment manufacturers and others interested in the industry.

Mr. Mitchell urged that all members contact non-member neighbors and sell them on the advantages of belonging to the association. As for

The panel on lightweight aggregates (left to right): Carl M. Rollins, Napa, Calif.; Raymond Wingo Jr., Richmond, Va.; Fred F. Bartel, Milwaukee, Wis.; and William J. Hicklin Jr., Jacksonville, Fla.

Panelists discussing dust problems were (left to right): Ralph H. Anderson, Columbus, Ohio; Virgil Owen, San Francisco, Calif.; Robert J. Hummel, Chicago, Ill.; and Thomas L. Amis, Dallas, Tex.

Speakers on disposal of waste concrete included (left to right): Raymond F. Powell, St. Louis, Mo.; Stanley S. Ernst, East Detroit, Mich.; and Byron P. Weintz, Los Angeles, Calif.

Only Jaeger offers it...

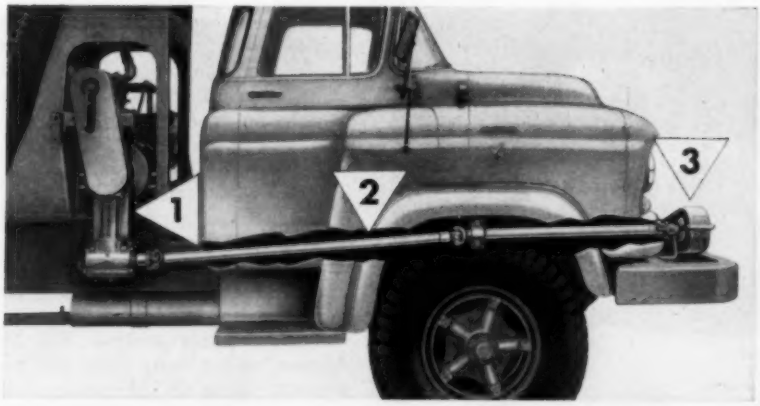
front-of-engine pto operated from cab or ground by finger-touch hydraulic control

Jaeger has held the original patent for a truck-mounted, truck-engine driven mixer since 1928. From 29 years of leadership now comes Jaeger's greatest development:

- **a front-of-engine pto drive controlled from inside and outside the cab,**
- **that can start, stop and reverse the drum while traveling,**
- **with the finger-tip ease and foolproof safety of single-lever hydraulic control.**

6 Cu. Yds. of Concrete with Legal Axle Loading

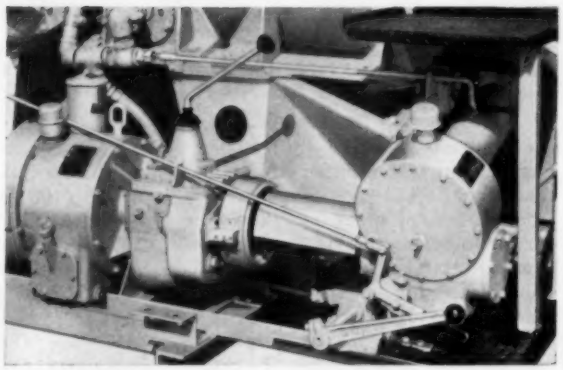
Model 5½-6 Jaeger on GMC FW-556 truck, with front pto has 3″ shorter center of gravity of 67″ instead of 70″ with 6 cu. yds. (24,300 lbs.) of payload. Of 44,565 lbs. g.v.w., 31,445 lbs. are on rear axles and 13,120 lbs. on front — an ideal mounting.



1. PTO ADAPTER:
Direct coupled to Jaeger 3-speed transmission. Auxiliary shaft drives pump.

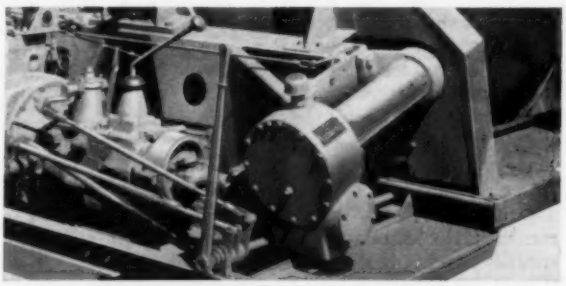
2. DRIVE SHAFT:
Located outside truck frame, always accessible. Installed in field or at factory without altering standard body metal. Standard parts thruout.

3. TAKE-OFF AND INITIAL REDUCTION:
Adaptable to any standard truck. Dustproof horizontal split case encloses timing belt and shafts. Shafts are on sealed, self-lubricated bearings. Note cross-braced protective bumper.



3-Speed Hydraulic Reversing Transmission Makes It Possible

Jaeger's exclusive hydraulic reversing transmission revolutionizes truck mixer pto operation. One touch of a lever does everything by power. Operator can cut his engine in and out or reverse his drum by automatic cycle, while traveling. Drivers welcome its ease. Owners welcome its complete safety and freedom from adjustment.



Optional transmission of automotive type is available if desired. Either transmission provides 3-speed drum operation of 1½ to 16 rpm within efficient engine speed range.

Complete information about the great new Jaeger Model F truck mixer, powered and equipped to assure the most profitable payload and operating characteristics, is waiting for you at your Jaeger distributor's. Check with him or write us, today.

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Distributors in more than 150 cities of U.S. and Canada and world-wide

Senator Barry M. Goldwater of Arizona, speaker at the luncheon, flanked by John W. Roberts (left), new president, and Robert Mitchell, retiring president of N.R.M.C.A.

his company's attitude, he felt that membership was indispensable, and that they received more benefits from the money spent for dues than for any other money spent in operations or capital investments. He paid tribute to the work of Messrs. Ahearn and Walker and their respective staffs for carrying on the cordial relationships which the association continues to enjoy with the allied sand and gravel industry, the manufacturers of truck equipment, the cement industry, and the various engineering centers, particularly the University of Maryland, which have performed research for the association.

He thanked the members of the committees functioning through the last year, mentioning specially those which have investigated taxes on mixer trucks; the Public Relations Committee under Ralph H. Anderson, an important and essential group; and the Committee on Labor Relations, a major association activity upholding right-to-work principles. He said that the freedom of association was an equally fundamental right embodied in our constitution, and that the arrogance shown in recent Senate investigations, by union officials who refuse to testify, is a contemptible mockery which constitutes one of the biggest problems facing America today.

Safety Awards Presentation of the five PIT AND QUARRY safety trophies to the winners of the N.R.M.C.A.-sponsored annual safety contest was made by Robert Mitchell, retiring president of the association. Winners for 1956 were as follows: Class A (more than 250,000 cu. yd.)—Anderson Concrete Corporation, Columbus, Ohio; Class B (100,000 to 250,000 cu. yd.) —Winkworth Fuel and Supply Company, Detroit , Mich.; Class C (50,000 to 100,000 cu. yd.) — Stewart & Nuss, Inc., Fresno, Calif.; Class D (25,000 to 50,000 cu. yd.) —Kuhns Concrete Company, Springfield, Ohio; and Class E (less than 25,000 cu. yd.) — The Trumbower Company, Nazareth, Pa.

The inclusion of the new Class E award for small producers in this year's contest indicates the increasing interest in safety in ready-mixed concrete plants, regardless of size. It had also been decided at last year's meeting to add the Class A award to cover plants producing more than 250,000 cu. yd., because the previous limitation of 100,000 cu. yd. for this class resulted in unfair grouping in this bracket. It is to be noted that it was the second consecutive year that Stewart & Nuss won the trophy in class C. Accepting the trophies for their respective companies were: J. Kitchell Smith (Class A); J. R. Hopkins, secretary, Michigan Ready Mixed Concrete Association (Class B); Edwin O. Harwell (Class C); and John D. Kuhns (Class D). The trophy for Class E was accepted by Kenneth E. Tobin Jr., associate executive secretary of the N.R.M.C.A., to be forwarded to the Trumbower Company, which had no representative present to receive the trophy.

Ahearn's Report In his report to members of both associations which was distributed prior to this meeting Vincent P. Ahearn, exectutive secretary, said that both were in excellent financial condition and that work was progressing satisfactorily on many matters of interest to members. Future prospects he held to be good for both the sand and gravel and ready-mixed concrete industries. Construction volume in 1957 is expected to total $46.5 billion, about 5 percent over the 1956 record. He also described the new highway program and its good and bad features as far as these two industries are concerned.

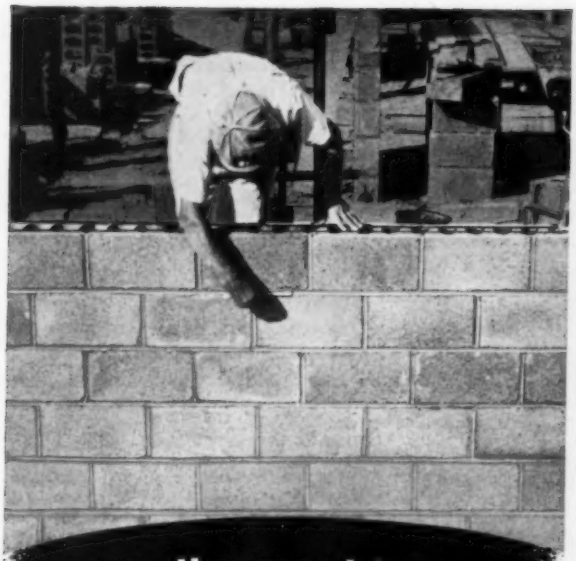
The ready-mix producer, said Mr. Ahearn, will benefit from the new highway program in those cases where the Interstate Highway System touches the metropolitan area. He is admirably equipped to furnish concrete for highway structures of all kinds, and a large percentage of these will be in or near metropolitan areas.

Association studies of cement supply showed that shortages early in the year were chiefly in the Middlewestern states and in Florida, and later mainly in the Middle West, but that the situation was much improved over 1955. Major increases in the capacity of the cement industry, he said, should insure an ample supply in 1957.

Mr. Ahearn also reported on the work the associations have done with respect to public relations, percentage depletion, labor relations, industrial radio, safety, freight rates, depreciation, cost accounting, group insurance, and the various governmental activities affecting these industries. Detailed reports on many of these were presented at the conventions and are covered in detail elsewhere in these reports.

Ohio R.M.C.A. Breakfast Sponsored by the Ohio Ready Mixed Concrete Association, the now-perennial "Ohio Breakfast" was held on Tuesday morning, attended by some 200 early risers who had been invited to hear the guest speaker, E. A. Lockett, president, E. A. Lockett & Son, Pasadena ready-mixed concrete producer. He was introduced by Roger H. Slugg, president of the association.

A colorful personality and an enthusiastic Californian, Mr. Lockett presented an encouraging picture of operations in his state, when he revealed *Why California Leads the Nation in Production of Ready Mixed Concrete*. The reason, according to Mr. Lockett, is that the California producers get more orders. He pursued this simple state-



Walls, not block, make your reputation

You *make* concrete block, but is that what you *sell?* Is that what the ultimate customer buys when he purchases your product to build a house, a store, office, garage or factory?

No. He buys walls. He judges you and your product on the basis of how it performs as a wall—after the units have been laid. That's why your reputation depends on how well those walls serve, how well satisfied the customer is.

The first requirement for quality walls, of course, is quality block. That means complying with ASTM and Federal specifications for moisture content, strength and water absorption.

Yet quality block alone will not assure walls that give good performances. Quality construction is necessary too. For that reason farsighted concrete masonry manufacturers recommend only those contractors who can be depended on for quality concrete masonry construction.

In addition they make frequent inspections of construction on jobs where their units are being used. They know that quality walls are the best salesmen for additional jobs, the best insurance for continued success and future business.

PORTLAND CEMENT ASSOCIATION

33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work

A NEW NAME IN CONCRETE ADMIXTURES

MARACON

MARACONS are admixtures for concrete that provide new and exceptional benefits so keenly desired . . . so urgently required . . . to meet existing needs of the concrete industry. MARACONS promote more complete hydration of cement particles . . . permit a substantial reduction in the unit water content without loss of plasticity or consistency of the mix. This means —

A. Lower Concrete Costs: —

1. Reduce cement required in a standard mix to give specified strengths.
2. Attain higher strengths without increasing cement content of a mix.
3. Maintain slump and workability at low W/C ratios.

B. More Durable Concrete: —

1. Minimize volume change in concrete before hardening, due to lower water content and more complete hydration of cement.
2. Achieve greater water-tightness and increased durability with respect to freezing and thawing.

The MARACONS also reduce water requirements in concrete mixes containing pozzolanic materials.

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CHEMICAL SALES DEPARTMENT

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The panel on prospects for 1957 included (left to right): Quentin W. Best, Consolidated Rock Products Co., Los Angeles, Calif.; Bert W. Milling, Underwood Builders Supply Co., Mobile, Ala.; George C. Eady, Consumers Supply Co., Louisville, Ky.; Harold M. Lacy, Dallas Concrete Co., Dallas, Tex.; and Noel J. Redmond, Blue Diamond Corp., Los Angeles, Calif., who acted as moderator.

ment in more serious vein, in explaining the steps of promotion which have resulted in a gradual build-up of the use of concrete until it attained the pre-eminent position it now holds over all other permanent building materials.

Plant Tour The plant tour, which has become one of the most popular features of these traveling conventions, was held on Friday, February 15, following the convention. The several hundred producers who took advantage of this opportunity to see some of the most modern operations in this area were guests of the local producers and their associations. They were taken by bus, first to one of four ready-mix plants — the Alameda St. plant of the Consolidated Rock Products Co., the Vernon plant of the Western Concrete and Equipment Co., the new plant of the Blue Diamond Corp., or the new plant of the Livingston Rock & Gravel Co. All then gathered at the Irwindale sand and gravel plant of Consolidated, where they inspected the 150-ft. deep pit and 1,000-t.p.h. plant and enjoyed an excellent lunch. After lunch the producers had their choice of trips to the nearby Santa Anita Race track or to the ready-mix plant of E. Lockett & Son in Pasadena, where a cocktail party was held after the inspection tour.

Other Activities As usual at these conventions, the formal entertainment was limited, with most of the evenings left open for sampling the wide variety of amusements available in the Los Angeles area. The one big show on the program, at the Moulin Rouge in Hollywood, was sold out. The house was packed, and all enjoyed an excellent dinner, top entertainment, and dancing. The only other organized activity was the "hospitality hour" the first two evenings, which gave producers a chance to contact each other and the machinery representatives. There was, of course, an excellent program of daytime entertainment for the ladies. This included teas, bridge, shopping, and, of course, a tour of Hollywood, Santa Monica, Malibu, etc., to see the homes of movie stars and other sights, and tours of Pasadena and Disneyland. A number of members and their wives also took a post-convention trip to Hawaii.

Regional Associations In a combined session of both associations, at which H. G. Feraud, executive secretary of the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association, was the presiding officer, five papers were presented, each dealing with a phase of the subject carried on at the local levels by state or area associations. The functions of these associations were explained by Mr. Feraud.

Labor Negotiations J. C. Moran, secretary of the Ready-Mixed Concrete Association of Metropolitan Pittsburgh, spoke first on *Labor Negotiations on Area Association Level as Carried on in Pittsburgh.* He first briefly outlined the labor contract history of the association since its inception in 1937, in which time only two serious shutdowns due to labor troubles were experienced. He felt that this was some sort of record in that Pittsburgh is a much unionized city, and that they were fortunate to have a labor committee appointed by the N.R.M.C.A. board, of men who are qualified to effect a fair contract with the various unions, representing laborers' and teamsters' union members.

In the light of subsequent contracts signed by others with the steel workers union, Mr. Moran feels that the agreements reached by the ready-mixed concrete producers with this union were satisfactory. A pension plan was included, consisting of payments of 5 cents per hour, with a maximum of $2 per week per employee, to go into effect in May, 1957. He feels that labor negotiations today are on a different plane than in the past, because both parties are smarter today. Both, he said, must recognize the same goal — growing profitable business, which provides income for owners and good wages and conditions for the employees. He urged that all producers properly prepare themselves—as the union negotiators prepare—prior to future meetings, if they are to survive in future negotiations for counteracting labor's demands.

Technical Committees Byron P. Weintz, of Consolidated Rock Products Company, Los Angeles, chairman of the technical committee of the two California associations, spoke on *The Value of a Technical Committee in State and Local Associations.* He answered the question the subject invited — specifically, to whom is it of value, and how much? — by stating that it must satisfy the customers and the producers alike, but that the degree of value is more difficult to pin down.

Mr. Weintz briefly described the organization of the technical committee, composed of nine members

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The Contractor: The Webster Company, St. Paul, Minn.

The Job: Install an automatic lawn sprinkler system for a new school.

The Problem: Heavy rains which threatened to prevent completion of the job on schedule. Trenching machines clogged up and track-type dozers tore up the rough graded area.

The Solution: A lightweight Sherman back-hoe for the trenching with the ability to push itself along the ground with its dipstick. For backfilling and backgrading, the Sherman AJ 25 Loader on the dependable Fordson Major Tractor is used. Because of its mounting and leverage design, it transfers more weight to the big driving wheels of the tractor with resulting traction advantage. Easy steering is assured by the Sherman Power Steering unit.

Actually, the Webster Company has found its Sherman equipment profitable even on a rental basis where operators can be expected to give a rig all the abuse it will stand. Rugged, heavy-duty construction is a prominent feature of all Sherman Power Diggers, Loaders, Fork Lifts and other equipment. See them in action soon at your local Ford Tractor Dealer or write for Bulletin No. 4660.

SHERMAN MAJOR DIGGER-LOADER COMBINATION performs a great many different jobs for the city of Dearborn, Michigan. The unit is used to dig water main taps and sewer sections, to install fire hydrants, to load and backfill and to do many miscellaneous jobs.

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ROYAL OAK, MICHIGAN
POWER DIGGERS† • FRONT END LOADERS* • FORK LIFTS

Sherman SP Hydraulics

*Manufactured for Sherman Products, Inc., by Johnson Hydraulic Equipment Company, Minneapolis, Minnesota

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from seven companies, six of which produce sand and gravel as well as ready-mixed concrete. He underlined the functions of any technical committee to help establish and maintain practical and reasonable specifications which all can live with, including the consumer, inspector, builder, and producer. If this basis is maintained, economies will result for all parties, especially from standardization of aggregate gradations.

He said that a great amount of effort has been made to convince specifying agencies that it is good economy to write specifications around local materials whenever possible. Another value of a technical committee is its work on quality control, applying both to bulk aggregates and ready-mixed concrete. In this work, new methods of checking and controlling quality are being developed, especially where the support of commercial testing laboratories is relied on. Other assignments of a committee include the creation of a market for surplus products; efforts directed toward public officials, engineers, and contractors, to use materials; and the personal contact with specification writers, to attain full co-operation with such officials.

Short Courses *Organization and Conduct of Short Courses in State and Area Associations,* a paper prepared by Paul Lenchuk, executive secretary of the Florida Concrete and Products Association, was read by Paul R. Smith, secretary, Empire State Sand, Gravel and Ready Mix Association, Buffalo, N. Y., in Mr. Lenchuk's absence. He confined his remarks mainly to explaining how that association solved the problem of answering the question: "What will I be getting for my dues which will benefit my company directly?"

First, many types of educational programs were studied, and a decision made that the best method would be in an exchange of ideas, one of the base tenets of all groups. In this, the members must talk with other producers, discuss with them mutual practical operating problems, and in meetings be the lecturer and instructor, whenever possible. The programs must be so designed as to reach many levels of personnel, from top management to the man who actually does the job. All short courses sponsored by the Florida association are of one-day duration, held on Saturdays, and limited to 6 hours of program, which is infused with social activities. Included in the sources from which the programs are developed are the cement companies, P.C.A., Chamber of Commerce, local architects, lawyers, and engineers, etc. A corollary development has been a series of short courses for such people, to educate them on the association's products.

The results from such educational programs, Mr. Lenchuk declared, have been astounding and very satisfactory, have developed a tendency to standardize operating procedures and systems and to create "intelligent competition" in place of the practice of "frustrating one's neighbor," previously followed.

Public Relations The role of the local association in public relations work was covered in a paper by J. Revell Hopkins, secretary of the Michigan Ready Mixed Concrete Association, in which, according to Mr. Hopkins, their group has done the best job. In this, he has found that all too often producers must be sold on what public relations are, and their constructive purposes — to interchange information that will help the industry grow, as a clearing house for technical data, and the establishment of standards, and to tell the public the facts about the industry.

Certain basic principles of good membership relations that apply include membership participation, regular reporting, service to members, and regular contact with all producers. One of these objectives, Mr. Hopkins explained, has been concentrated on in each of the five years of the existence of the association. He explained in detail the work of selling the association to members.

Legislative Activities Legislative activities, as carried on by the Texas Aggregates Association and the Texas Ready Mixed Concrete Association, was covered in great detail in an excellent paper by Ray L. Cain, executive secretary of these separate groups. Being chartered as nonprofit organizations prohibited the groups from engaging in political activities, so that the policies pursued consisted of remaining anonymous and watching pending legislation.

Mr. Cain emphasized that, while this "homework" of the producers was conducted on a "grass roots level," each member was responsible for contacting his senator or representative, and explaining to them how each tax or other contemplated measure would affect his business. Especially vital laws were carefully scrutinized, such as those pertaining to industrial relations, safety, workmen's compensation, vehicle load limits, registration of vehicles, pollution, water legislation, etc. In this work, Mr. Cain declared that it was necessary that the producer know his product, know with whom he is dealing, and present his story in a straightforward and honest manner.

Washington Scene Highlight of the final joint session of the Los Angeles gathering was Mr. Ahearn's address, in which he analyzed the political climate for business in Washington at the present time and pointed out some of the effects it might have on the industry in general.

In Mr. Ahearn's opinion, there

One of the groups who made inspection trips via bus to various ready-mix plants in the Los Angeles area.

will be no tax reduction this year, either in personal, corporate, or excise taxes. Congress will doubtless make some brave efforts to reduce taxes for the small businessman and for people in the lower-income brackets, he stated, but there doesn't seem to be much basis now for believing that these efforts, however genuine, will be at all effective.

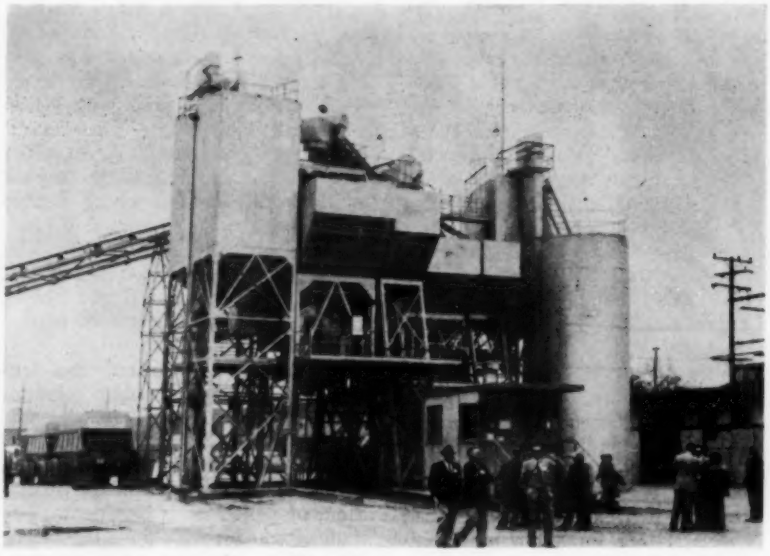
"Indeed," he pointed out, "there is disquieting evidence that the taxes levied by the Highway Revenue Act of 1956 will fall short of producing money to support the authorized spending. The Senate increased the interstate highway system to 41,000 miles but did not change the levies worked out by the House for a 40,000-mile system, even though the additional 1,000 miles added somewhere around an additional billion dollars to the cost of the system."

"Furthermore, the tax levies were worked out before the House added the Davis-Bacon (wage determination) Act, which will cost an expected additional $3,000,000,000. Prices of steel, cement, and other highway materials have increased since the Act was passed; labor and administration costs have gone up substantially; and the cost of land has skyrocketed to a point where we may begin to regard land as the shortest thing of all when it comes to staking out a new interstate highway system."

Although painting a rather doleful budget and tax picture, Mr. Ahearn feels there is no cause to worry a great deal about any effort to scuttle the Taft-Hartley Act. In fact, if the unions don't watch out, he is of the opinion that the Act may be made stronger and not weaker. Repeal of T-H was never more than a slogan, and, in his opinion, to the unions it has been simply a "gimmick" and a useful political argument. "Down in their hearts, union leaders know they will never get Taft-Hartley repeal, nor do they actually want it," he declared.

Touching briefly upon the anti-trust field, Mr. Ahearn believes it quite likely that Congress will pass some kind of legislation which will require prior approval of proposed mergers by the Department of Justice. There is considerable support for such action, he revealed, because there is genuine concern about the impact of recent mergers on individuals and upon the country itself.

There are other bills of more or less interest to the businessman, like the Wage and Hour Law, legislation to establish control over employee pension and welfare plans, appropriations for federal public works other than highways, and a large number of bills which are designed to equalize competition among all shades and sizes of business. Another proposal reviewed by Mr. Ahearn will be an attempt to restore to the states their right to regulate labor disputes which progress to the point where strikes occur, or are threatened, a right taken away from them in what he called a "notorious example" of judicial lawmaking by the Supreme Court.



The ready-mixed concrete plant of Western Concrete and Equipment Company, Los Angeles, was one of the operations visited.

Public Relations The growing importance and significance to both industries of good public relations was the reason for a combined session of both associations to discuss this subject. In this meeting, the chairman of the public relation committee of each group covered the program carried out so far by his association toward this goal. Ralph H. Anderson, Anderson Concrete Corporation, Columbus, Ohio, told of what has been done by the ready-mixed concrete group, and what the members hope to accomplish in the future. He prefaced his remarks by declaring that no action by the board of directors, nor any appropriation made by it for any reason, will return greater dividends than that of the appropriation of $10,000 by N.R.M.C.A., to get a public relations program started.

Foremost in this program was the preparation and distribution of a questionnaire, mailed to all members last year. In general, this was broken down into two parts, relating to (1) operation of plants, and (2) operation of trucks. Members were asked to reply in detail relative to zoning problems, air pollution, wash-water disposal, left-over concrete, plant noise, dust and dirt, and general plant appearance. Under operation of trucks were questions pertaining to general complaints about truck noise, restricted truck routes, spillage of material, excessive speed, and handling of trucks; and also suggestions for an active program for creating good will. A progress report made at the meeting of the board of directors last October was sent to all members. A condensation of the final report covering the operations of some 500 plants was published in the CONCRETE MANUFACTURER, March, 1957, page 334.

Mr. Anderson also described several other pieces of literature which have been sent to members over the last year, on various phases of public relations. He described his company's experiences over the last nine years, from a date on which their insurance company had advised that they were not a "satisfactory risk" because of a poor accident record. He related the accomplishments made since then, through the inauguration of safe driving campaigns and interest in civic affairs, as well as by improving the appearance of their plant and equipment, which has gained the good will of neighbors and the respect of public officials. His talk was replete with practical

instances of how good public relations can be attained.

The final portion of the session on public relations consisted of a panel discussion of various aspects of the subject for the two industries. Panel members were William Edward Hole, American Aggregates Corporation, Greenville, Ohio, on zoning; Robert J. Hummel, Consumers Company, Chicago, Ill., on local press relations; Gary L. Marable, Ready Mix Concrete Company, Fort Lauderdale, Fla., on metropolitan areas; and E. J. Nunan, Buffalo Slag Company, Buffalo, N. Y., who spoke on legislative features of public relations.

Mr. Hole, chairman of the committee on zoning and land rehabilitation of N.S.G.A., had previously prepared two eloquent and concise reports setting forth the basic philosophy of zoning laws, the rights and obligations of the industry under these laws, and its obligations to the public welfare and convenience. In his presentation on the panel, he reviewed the high points of these papers in considerable detail. He stated that only by collective action at the national association level can we evolve an affirmative and dynamic program which will assure the continued functioning of the industry as an essential component of the nation's economy.

Robert J. Hummel covered the importance of establishing and maintaining good relations with the local press, to combat the growing tendency on the part of newspapers to publicize stories from homeowners regarding the alleged instances of dust, noise, and stream pollution emanating from sand and gravel workings and ready-mix plants. To accomplish this effectively requires that the producers remain ever alert for good publicity.

Mr. Marable admitted that, while his company's operations were carried on in a bright, colorful, clean city, he had the same problems as others in maintaining good public relations. He described the various ways through which favorable publicity has been attained, these including courteous drivers; truck units kept well painted and clean; plants continuously maintained with painting by a clean-up crew; lighted billboard advertising; truck signs carrying messages in behalf of civic undertakings; radio equipment on all units; human interest appeal in advertising civic needs or problems; and the installation of a Santa Claus atop the plant at Christmas.

He showed a series of slides picturing these methods of influencing public opinion favorably and assured his listeners that each was an excellent investmetn in good will. While such promotion is vitally concerned with selling concrete, its direct effect is to sell the company to the general public, the banker, zoning board, police department, building department heads, and city, county, and state officials. The community responsibility is recognized by his company, and the public is told of this at every opportunity.

Mr. Nunan presented the legislative aspects of a public relations program, particularly as to the outstanding work done by his local association, Empire State Sand, Gravel and Ready Mixed Association, of which he is president. The hub of contact with their legislators, he said, were meetings, both statewide and local. It is at such meetings that personal contact with the men who must pass on legislation can best be developed, and later used to the benefit of producers when unfavorable zoning or otherwise restrictive measures are considered.

A commission has been appointed at the state level for control of the industry he represents. Its membership consists of men trained in the technical and engineering fields, capable of studying each problem and finding a solution which would be in the best interests of the public, but would permit the producers to operate in an economic manner. The subjects covered by separate committees within the commission included zoning, vibration, topsoil removals, abandoned excavations and rehabilitation; noise, and dust control. The briefs prepared by each committee are now being studied, and following public hearings throughout the state, it is hoped that a favorable report will be presented to the legislature for action.

Insurance Eric C. Ryberg, Utah Sand and Gravel Products Corp., Salt Lake City, Utah, opened his discussion on *Basic Insurance for the Ready Mixed Concrete Industry* with a pertinent analogy—"Insurance is akin to a lifeboat on a ship. You must carry one just in case you need it. You cannot afford the risk of being without it."

Noting that this industry faces risks in many areas, Mr. Ryberg enumerated several factors. Among these are the extremely heavy equipment units which must often travel through highly congested areas, the vulnerability of the product due to changes made by customers, and also the fact that the product is highly perishable.

While pointing out that the individual operator alone knows how much risk he can absorb, the speaker cautioned that there are two extremes—the operators who carried inadequate, or no protection, with unhappy results, and those who are "insurance poor" due to poor planning of risk protection.

It was emphasized that an agent or broker should be selected with extreme care since it is necessary that he have his client's full faith and confidence. The firms he represents must have integrity, be financially sound, and have a record of paying their just claims expeditiously. Further, the operator must have assurance that his carrier will provide support and defense in the face of a claim and/or litigation.

Two main fields for protection were marked by Mr. Ryberg. The first is that of protection for specific property against such risks as fire, flood, civil disorder, dishonesty, indiscreet use, etc. A current trend toward blanket coverage of all property against such risks was noted.

The second main field of protection is that of legal liability. This was described as having three aspects—that of general liability both on or off the premises to the public, to business, and to casual visitors; coverage for the public due to use of motor vehicles; and product or completed operations insurance.

In conclusion, Mr. Ryberg emphasized that the operator is out of pocket if he assumes the risk himself which he would be doing, in effect, if he failed to have his agent or broker acquaint him with all the coverages that are available.

Two-way Radio *Practical Problems in the Installation and Operation of Industrial Radio* were discussed in a paper prepared by Glenn C. Cook, American Builders Supply Co., Louisville, Ky. Due to the unfortunate death of Mr. Cook, who suffered a heart attack en route to the convention, his paper was presented by Kenneth Tobin of the N.S.G.A. staff.

It was suggested that perhaps the most important advance in the distribution of concrete since the advent of modern truck mixer bodies is two-way radio, and that the ready-mixed concrete industry is currently going all-out for radio communications.

Under existing FCC regulations, the ready-mix operator has two radio services available—the special indus-

Another LEADER in the Block Industry!

Unique Cubing Set-up Saves Manpower!

A standard Besser magnetic hoist is used for placing pallets holding cured units on a 50 ft. chain conveyor. As pallets move along conveyor, two men do the cubing. Pallets continue to end of conveyor, are automatically turned over and materials remaining on pallets drop into a small bucket conveyor which empties into a dump truck. Empty pallets proceed on underside of conveyor to the front where a hoist man picks up pallets with magnetic hoist and reloads to rack. Rack loaded with empty pallets is then returned to the Vibrapac. Formerly 6 men were required to do the work now done by 2 men.

Orco Operates Two Vibrapac Plants

Orco Block Company, Stanton, California, started in the block manufacturing business about ten years ago. Today, they operate two plants, one at Stanton and one at Santa Ana. Both plants are equipped with Besser Vibrapac machines.

With the ever-increasing demand for high-quality block, Orco wanted to step up their production and, at the same time, improve the quality of the block. Their Vibrapacs are doing both, efficiently and with steady, uninterrupted production.

Vibrapacs can do the same for you. Why not investigate their profit-making possibilities? Write for literature.

BESSER Company

BOX 131 • ALPENA, MICHIGAN, U. S. A.

First in Concrete Block Machines

Pete Muth and Arvid Johnson, owners of the Orco Block Company plants at Stanton and Santa Ana, California.

★This is the 137th of a series of ads featuring leaders of the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

A 6-109

Aerial view of the Orco plant at Stanton, California, showing office building in left foreground. The Santa Ana plant is 15 miles east from Stanton.

Besser Vibrapac installed at the Stanton plant. Shows off-bearer removing block with power hoist.

trial radio service and the citizens radio service. Among the restrictions on the former is the regulation that such transmitters cannot be used in a metropolitan area of 500,000 population or more unless the applicant can show that the transmitting equipment will be used in an area of low population density removed from the urbanized sections of the area.

Eligibility requirements for a citizens radio service license are much less restrictive. As defined in FCC rules and regulations, this is a combination fixed and mobile service intended for use in private or personal short distance radio communications, signaling, control of objects or devices by radio, and other purposes not specifically prohibited.

With operating frequencies within the assigned band of 460-470 mc., and 27.255 mc., the citizens service is divided into three groups—classes A, B, and C. The latter two are described as currently of little use to the ready-mixed concrete industry.

In comparison with special industrial radio service, which operates in the 450-460, 152-162, and 25-50 mc. ranges, the effective range of citizens radio is usually less. A range of 15 to 20 miles between base station and mobile units can be expected in citizens radio, while a range of 30 to 40 miles can be realized with industrial service on the 30-50 and 152-162 mc. bands. Factors affecting this are type and height of antenna, and intervening objects. Due to the power limit of 50 watts input for citizens radio, the range can only be increased by the use of high gain antenna at a greater height.

To conserve frequencies, it was suggested that base stations and mobile combinations be arranged for simpler operation—all operating on the same frequency, which allows intercommunication of mobile equipment as well as with the base station.

Radio Forum Kenneth E. Tobin, Jr., associate executive secretary, N.C.M.A., presided as moderator in an open forum discussion on industrial radio in place of Glenn C. Cook. The two other members of this panel were M. Eugene Sundt, Albuquerque Gravel Products Company, Albuquerque, N. M., the newly elected vice-president of the association, and William J. Hicklin, Jr., Capitol Concrete Company, Jacksonville, Fla., a newly appointed member of the executive committee. Stanton Walker also sat in on this panel and contributed much information to the discussions.

Mr. Sundt proved himself a real expert on the subject of industrial radio, in presenting a paper on the installation of two-way, fleet units at his plant and throughout the aggregate production areas, fully covered by radio communication. He emphasized that increases in power in the base stations do not necessarily increase the range of the radio units, as a more efficient way to increase such range is to install higher antennas. He advocated use of two-way system leased lines, and suggested that a spare radio unit at the shop will prove useful.

Mr. Hicklin briefly described the installation at his company's plant in Jacksonville, Fla., and answered questions from the audience as to details of the installation. Considerable discussion ensued from the floor, pointing out the interest in the subject. Topics covered included range of radio in various installations, suppression of noise in receivers, weather or seasonal variations, etc. It was stated that in high-band frequencies these variations do not seem to be so important.

Cement Testing In discussing *The Cement Testing Program* of N.R.M.C.A., Stanton Walker read the paper on *The Objective* prepared by Robert C. Collins (Warner Co., Philadelphia, Pa.) chairman of the association's Committee on Cement. There is, he said, wide variation in the strength tests of concrete and in the qualities of cement. The first tests were made on 26 samples from six sources in order to prove that such variations do exist. Possible seasonal variations were found in samples from two of the six sources. Mortar strengths and concrete strengths in most cases showed close correlation.

Some of the conclusions arrived at as a result of these tests were: significant variations were found in all cements from shipment to shipment; these variations were responsible for the variations in concrete strength; a spread of 45 percent was found in overall average strength of the cements tested; variations in mortar strengths were not always reflected in concrete strengths.

Ready-Mix Standards Stanton Walker, as chairman of the N.R.M.C.A. committee on ready-mixed concrete standards, presented a paper on the status of the industry standards, as developed by the association and the Truck Mixer Manufacturers Bureau, an affiliate. He emphasized therein that it was not a general discussion of the overall problem.

He briefly reviewed the history of the association's committee's contact with Committee C-9 of the A.S.T.M., from the issuance of a tentative standard in 1933, with revisions made ten times during the intervening 24 years. That standard dealt primarily with the quality of the concrete and hardly at all with the equipment producing it. The first edition of the N.R.M.C.A. standards for the operation of truck mixers and agitators was issued in 1937, and revised at interim periods up to 1953. This edition dealt mainly with capacities and rates of mixing not covered by the A.S.T.M., but still failed to cover certain factors which needed to be considered in the interest of uniformity of practice.

Accordingly, the T.M.M.B. standards were developed which, to date, have worked well and to the interest of all concerned. Limitations were derived on capacities, rates and amounts of mixing, length of haul, etc., which, under adequately controlled conditions, should result in good concrete. Mr. Walker suggested that in the interest of control of quality it would be well to specify a maximum number of revolutions of the drum before the concrete is discharged.

Operating Problems Three panel discussions were furnished on operating problems, including (1) use of lightweight aggregates, (2) disposition of solids from waste concrete, and (3) control of dust in batching operations.

The first of these panels was composed of Carl M. Rollins, director of research, Basalt Rock Company, Inc., Napa, Calif.; Raymond Wingo Jr., district sales manager, Southern Materials Company, Richmond, Va.; Fred F. Bartel; and William J. Hicklin Jr., Capitol Concrete Company, Jacksonville, Fla.

Mr. Rollins emphasized, in a brief discussion, that proper precautions must be taken in the use of lightweight aggregates, the degree depending upon the amount of particle strength of the aggregate considered. He cited several methods suggested by associations promoting different types of lightweight aggregate, in order that these be properly used. As to pricing of lightweight concrete, a reasonable profit, he said, was to be expected, but he urged against overpricing to be on the safe side. It is better to find out about the particular type, and use it in accordance with the manufacturer's directions,

with a definite allowance being made for possible degradation of the aggregate particles from overmixing.

Mr. Wingo described the use of lightweight aggregates at his plant in Richmond, Va., in the sale of over 12,000 cu. yd. of lightweight ready-mixed concrete last year. He paid tribute to calcium chloride as the principal material they used as an accelerator, saying that it speeds up the development of strength and increases the strength at all ages, but, he added, it also increases the shrinkage and reduces the resistance to sulphate attack. Its use in lightweight concrete tended to prevent segregation.

Mr. Bartel presented a paper on tests for air content of concrete made with lightweight aggregates, by the use of volumetric procedures described in A.S.T.M. C-173. He said that this method is to be preferred to the gravimetric or pressure procedures also covered by A.S.T.M. standards (C-138 and C-231), because (1) such aggregates cannot be brought to a saturated-surface-dry condition with any degree of accuracy, and (2) the pressure may compress air within the interstices of non-saturated, porous aggregates.

Mr. Hicklin told of several jobs on which lightweight aggregates had been used in the concrete, and of the trouble experienced by the producers who did not know how to handle such aggregates. Closer control is needed when using lightweight aggregates because of the wide variation found in the specific gravity of such materials. It is difficult, because of this characteristic, to maintain a uniform yield. The aggregate in some cases collapses or otherwise reduces in volume, and it is necessary to know these characteristics in order to calculate the volume of the resulting concrete.

Disposition of Solids The members of the second panel, discussing the disposition of solids from waste concrete, were Raymond F. Powell, president, Concrete, Inc., St. Louis, Mo.; Stanley S. Ernst, president, Ernst Fuel & Supply Company, East Detroit, Mich., and Byron P. Weintz, chief engineer, Consolidated Rock Products Company, Los Angeles, Calif.

Mr. Powell briefly described how his company utilizes a sump pit, into which waste concrete is dumped. As this fills with water, solids stay at the bottom, and are removed by clamshell bucket when sufficient accumulation of these occur. The water passes into a flowing sewer, and is conveyed away into the city system. No trouble has been encountered on this system which has been in use for several years.

Mr. Ernst went into considerable detail in telling how to build a settling pit to receive the waste concrete at their plant. He showed a series of charts which furnished dimensions of this pit, the filtering bed, drains, and other details of its construction. The water flows over into the filtering bed and from that point into an open ditch in which it apparently drains without trouble.

Mr. Weintz described the methods used in his company's seven plants in the disposition of the solids in waste concrete. All these plants are so located that there is adequate room on all sides of each plant to accomplish disposal without trouble. However, waste concrete is a valuable item with them, he said, and is used for paving areas in the yards by hand placement and finishing. In fact, over 16½ acres of yard has been paved with this waste concrete over the last ten years, using this method of disposal. Under special deals, they sometimes sell this concrete to the state highways for non-specified uses. They have tried giving it away, but found that this method takes up too much truck time to be economical.

Dust Control The third panel discussion of the operating session took up the problem of control of dust in batching operations. Panel members were: Ralph H. Anderson, president, Anderson Concrete Corp., Columbus, Ohio; Robert J. Hummel, vice-president, Consumers Co., Chicago, Ill.; Virgil Owen, Pacific Cement & Aggregates, Inc., San Francisco, Calif.; and Thomas L. Amis, Wamix, Inc., Dallas, Tex.

Four basic reasons were pointed out by Mr. Anderson for making prevention of dust a "must" in today's ready-mix concrete business. These included concern for employees' health and morale, care of electrical and other motors, cost savings through recovery of cement dust, and regard for good public relations. Dust problems have grown as the company expanded, the speaker said, and further, the batching plants while originally at a distance from residences and other businesses, are now surrounded by them.

Experience has shown that maintenance of the dust-collection equipment at Mr. Anderson's plant is nominal—two motors and a fan comprise the moving parts, and filter bags, depending on use and care, have required replacing only every 4 or 5 years. Filters are cleaned twice a week, and during the busy season approximately 500 lb. of cement is reclaimed from one unit each week.

Mr. Anderson, in conclusion, stated that a study is currently under way on the possibility of using fog sprays and wetting agents diluted with water to precipitate the cement dust into the truck charging hoppers during loading. It is hoped that this may eliminate the dust and reclaim the cement at the same time.

The location of the Consumers Co. plant described by Mr. Hummel is such that dust control is mandatory. With this particular ready-mix operation situated across a highway from a school and residences in a Chicago suburb, as well as only a short distance from the shopping center, dust complaints were frequent prior to the installation of dust filtering and collecting equipment.

A thorough study of the facility showed dust to be escaping from four main points: where the batcher discharges into the mixer; the vent on the cement storage silo; the rail unloading point for cement cars; and the receipt of bulk cement in dump trucks. The latter are now completely supplanted by screw-type discharge trucks.

The dust collectors are operated only during the loading of transit mix trucks or the unloading of railroad cement cars into the silo. It is estimated that 75 to 100 lb. of cement dust would otherwise be released into the air are accumulated during a normal daily operating period. No attempt is made to operate the collectors during the winter months, since moisture from the steam used to heat the aggregates sets up the cement dust and makes filtering impossible.

Stating that his firm operates 24 batching plants in northern California, Mr. Owen indicated that not all have the same dust problem. The principal difficulty appears to be that of controlling the cement that billows from the mixer truck when a batch is loaded.

To combat this problem most of the plants have been equipped with gathering hoppers, some of which are constructed for mechanical raising and lowering to accommodate varying heights of mixer trucks. Experiments have been conducted with the latter hoppers by installing a 1-in. copper tube water ring in an effort to wash the cement dust back into the mixer trucks.

Another experiment described in-

volved an attempt to slurry the cement as it leaves the weigh hopper. In plants where the cement weigh hopper is mounted above the aggregate weigh hopper, a water pipe was installed to discharge into the cement as it was being released from its hopper into the aggregates.

While the experiment has shown good possibilities, there is still some difficulty with a buildup in the aggregate weigh hopper resulting from the introduction of water. To date, Mr. Owen said, the method that has proved most practical for his firm's operations is the use of a water ring with the gathering hoppers. However, it is not regarded as a final answer, but only a step in the right direction.

Mr. Amis, taking the spot on the panel originally to be filled by Hill Cocke, president, Valley Ready-Mix Concrete Company, Harlingen, Tex., who was not present, described the use of cement slurry by his company. He said that by this method of incorporating the cement into the batch they get higher-strength concrete for the same amount of cement, and can load a semi-shrink mix faster. A mortar-mixing continuous type of mixer is used, which has a 40-in. diameter drum 6 ft. 7 in. in length with panel blades turning inside the drum. Feed is by gravity, each charge taking from 20 to 30 gal. of water. Through a flop gate, the slurry mixture can be discharged directly into the truck drum, and flows like water when discharged at slumps of 3 in. or more.

Besides permitting faster loading of trucks (90 to 100 cu. yd. hourly), a further advantage of using slurry is the practical elimination of cement dust. He said that yard dust is bad, but does not come from leaks in the cement handling, which is conveyed by means of a 6-in. diameter auger running a 400 r.p.m., directly connected to the drive motor.

Cost Accounting A report was made by Paul J. Kremer, chairman of the Joint Committee on Cost Accounting, on the cost accounting manuals recently completed by the committee and distributed to the members of both associations. These cover sand and gravel land operations, sand and gravel marine operations, and ready-mixed concrete. Mr. Kremer pointed out that each of the four other members of the committee is the comptroller of his company and that the manuals have been received by the Comptrollers Institute of America and by other experts. They reflect all of the latest accounting developments but are written so that no expert help is needed to use them.

Each member of the committee then briefly described some of his own accounting methods. According to one member the sand and gravel division has always charged the ready-mix division actual cost but this has some disadvantages. It is planned to start charging the same price given dealers.

Another member said that his firm sets up both operating and sales budgets and can always tell when anything gets out of line. Good clean property records are necessary for depreciation purposes and for determining fire coverage. Each year, he said, values are adjusted on a basis set up by a large appraisal company. Efforts to achieve economies are spurred by paying each plant superintendent $10 to attend a monthly meeting of the board of directors.

Mr. Ahearn pointed out that these four experts donated their time and their companies paid their expenses in getting up these manuals. As a token of appreciation a nice leather portfolio was presented to each member of the committee. In addition to Mr. Kremer the committee consists of: J. M. Criswell (Warner Co.), Eugene J. Halter (J. K. Davison & Bro.), Henry H. Kerwin (Eastern Rock Products, Inc.), and J. H. Reid (Standard Paving & Materials Ltd.)

Employee Benefits At the joint meeting of the boards of directors of the two associations, William Moore, chairman of the board of trustees of the group insurance plan, gave his report. There are 61 member companies subscribing to this plan, which is now out of debt to the associations and has its own surplus. Not only is participation increasing but the coverage of the plan now includes executive and supervisory personnel and various other benefits. Herbert Jahncke was elected a trustee of the plan, replacing Stanton Walker.

Mr. Moore also gave a progressive report of the joint committee appointed to study the feasibility of a retirement plan for executives and employees of active member companies. Such a plan, it was pointed out, would have many advantages for companies of any size and could be made to cover those already having a plan of their own. A tentative plan has been approved by the committee and will be discussed at the joint board meeting in August.

Federal Tax Laws Speaking on *Consideration by Congress of Proposed Changes in the Federal Tax Laws,* Atty. Sapienza was emphatic in his belief that there will be few, if any, tax cuts this session. Rather, he said, the lawmakers and the Treasury Department are devoting much effort to plugging loopholes in the present tax laws in an attempt to increase revenues wherever possible.

Early in the present Congressional session, Washington looked hopefully for some form of tax relief but President Eisenhower's budget message quickly put a damper on any such hopes, he related. At the same time, he predicted that many years may pass before any real tax-reduction program can be put into effect, although a severe business recession could bring this about.

Mr. Horsky also appeared as a speaker at the session to discuss current development on the legality of meeting a competitor's lower delivered price for the same commodity. He gave as an example, a situation wherein two ready-mix producers in one community buy cement from two different mills, one local, the other 150 miles or so distant. The producer buying from the distant mill would be forced to pay up to 25 cents per bbl. more if the price differential were not permitted to be absorbed. This would without doubt force one of these producers out of business, and the situation would certainly not be at all protective for small business.

In defense, he said the association is, therefore, vigorously opposing the Patman-Kefauver Bill and he believes the bill is destined for defeat. The measure was designed to overcome the Supreme Court ruling that it was a complete defense to a charge of price discrimination under the Robinson-Patman Act for a seller to show that his price differential was made in good faith to meet a lawful and equally low competitor's price.

Pavement Market With about one-third of the country's cement shipments finding its way into the construction market in the form of ready-mixed concrete, the Portland Cement Association is devoting a proportionate share of its promotional efforts to the "buy ready-mix" theme.

James D. Piper, P.C.A. vice-president for promotion, outlined various facets of this program at the joint session on Thursday morning, illustrating a series of direct-mail pieces

(*Continued on page* 276)

A BLAW-KNOX *Hi-Boy* TRUCK MIXER OWNER WRITES:

"Erie Builders' likes the capacity and maneuverability..."

Weight distribution to haul bigger payloads *without exceeding legal axle load limits* . . . compact design to mount on shorter more maneuverable trucks — these are two of the most profitable features of Blaw-Knox Truck Mixers for operators like Howard Doolittle of Erie Builders' Concrete Company of Erie, Pa. The mixers used by Erie Builders' mount on 170½" wheelbase trucks that are 12" shorter than the trucks they mounted their old mixers on. This gives them mixers which mount on more maneuverable trucks that can haul bonus payloads through traffic, onto the job site and up to the forms *faster*.

Dozens of other Blaw-Knox features you will want to investigate include the faster charging, thorough mixing, speedy discharging and simplified water system. Call your Blaw-Knox distributor for complete information.

Central-Mixed Concrete
CONTROLLED QUALITY • SERVICE

ERIE BUILDERS' CONCRETE COMPANY

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Blaw-Knox Company
Construction Equipment Division
Mattoon, Illinois

Gentlemen:

You asked us to let you know how we like the two 6½ cubic yard truck mixers you shipped to us in April of this year.

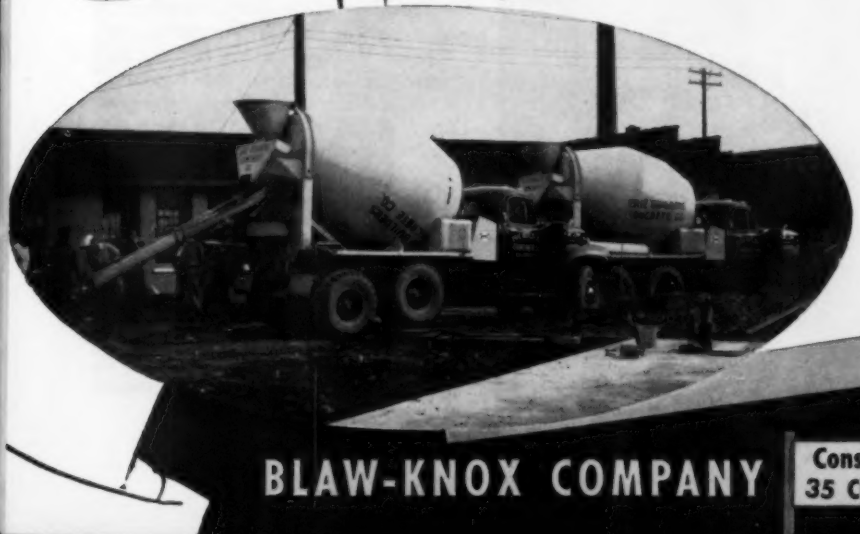
It might interest you to know we purchased your mixers primarily because your district salesman, Mr. Berschger, proved to our satisfaction they could be mounted on the trucks we were using, with a 12" shorter wheel base, without changing the weight distribution between the front and rear axles.

We have the mixers mounted on B42S Mack trucks with 170½" wheel base, and our axle loads are what we figured they would be.

The shorter wheel base enables the drivers to spot the truck quicker, especially in tight places, and they make more trips per day than our other trucks. We batch them with 6¼ cubic yards of premix concrete, which is sometimes 6" slump, but there is no spillage on the road.

The mixers must be well balanced as there is practically no side sway on the road. They charge and discharge fast, and we are very well pleased with their performance.

Yours very truly,
ERIE BUILDERS CONCRETE COMPANY
Howard Doolittle
Howard Doolittle, Manager



BLAW-KNOX

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Construction Equipment Division
35 Charleston Ave. • Mattoon, Illinois

Philip Paolella (left), the new president of the association, accepts the gavel of responsibility from the retiring president, Earl W. Peterson.

N.C.M.A.

37th annual convention

Another ON THE SPOT Report

DEVIATING for the first time in many years from the custom of holding its convention and biennial equipment show in either Chicago or Cleveland, the National Concrete Masonry Association this year elected to journey to St. Louis for its 37th annual meeting and 10th concrete industries exposition, which were held February 25 to 28 at the Kiel Auditorium in that city. The double attraction of convention and equipment show lured a near-record crowd, which approached in numbers that of the meeting of two years ago at Chicago, when nearly 4,800 were registered.

The damp weather which prevailed the first two days of the meeting resulted in only minor inconvenience to the visitors, in going from their hotels to the Auditorium, where all meetings and the show were held. On hand were over 500 wives, who enjoyed the ladies' program, including a tea, a viewing of Cinerama, and a luncheon. All ladies were also invited to attend the get-together party of Monday evening and the annual banquet, held on Wednesday evening. All convention sessions were held in the Opera House or in other large meeting rooms in the auditorium, directly above the exposition hall, headquarters for the equipment show.

As in former years, convention sessions were held each morning from 10 a.m. to 1 p.m., in order that the delegates could visit the exposition during the afternoon from 1 p.m. to 6 p.m. The exposition occupied 25,000 sq. ft. of floor space and set a new high in total space and the number of exhibitors, unveiling a wealth of equipment and materials used in the production, handling, distribution, and use of concrete and concrete masonry units.

Presiding at the initial meeting on Monday was Earl W. Peterson, president of the association for the last year. He introduced the Reverend A. A. Rehme, of St. Louis, who pronounced the invocation for the meeting. Following this, Carroll Strohm Jr., Nashville Breeko Block and Tile Company, Nashville, Tenn., N.C.M.A. secretary-treasurer, presented his annual report on the financial condition of the association.

Earl W. Peterson with some of the new directors: Henry C. Quaritius, New York; Leonard Jones, Tulsa, Okla.; Carl S. Spickelmier, Indianapolis, Ind.; John T. Pennachetti, Thorold, Ont., Canada.

W. P. Markert, director of promotion, N.C.M.A., Chicago, Ill.

and 10th concrete industries show

In connection with his talk, Mr. Strohm showed four slides which described in an interesting way how all incoming funds received by N.C.M.A. are distributed to various projects and expenses in the course of the last year's operations.

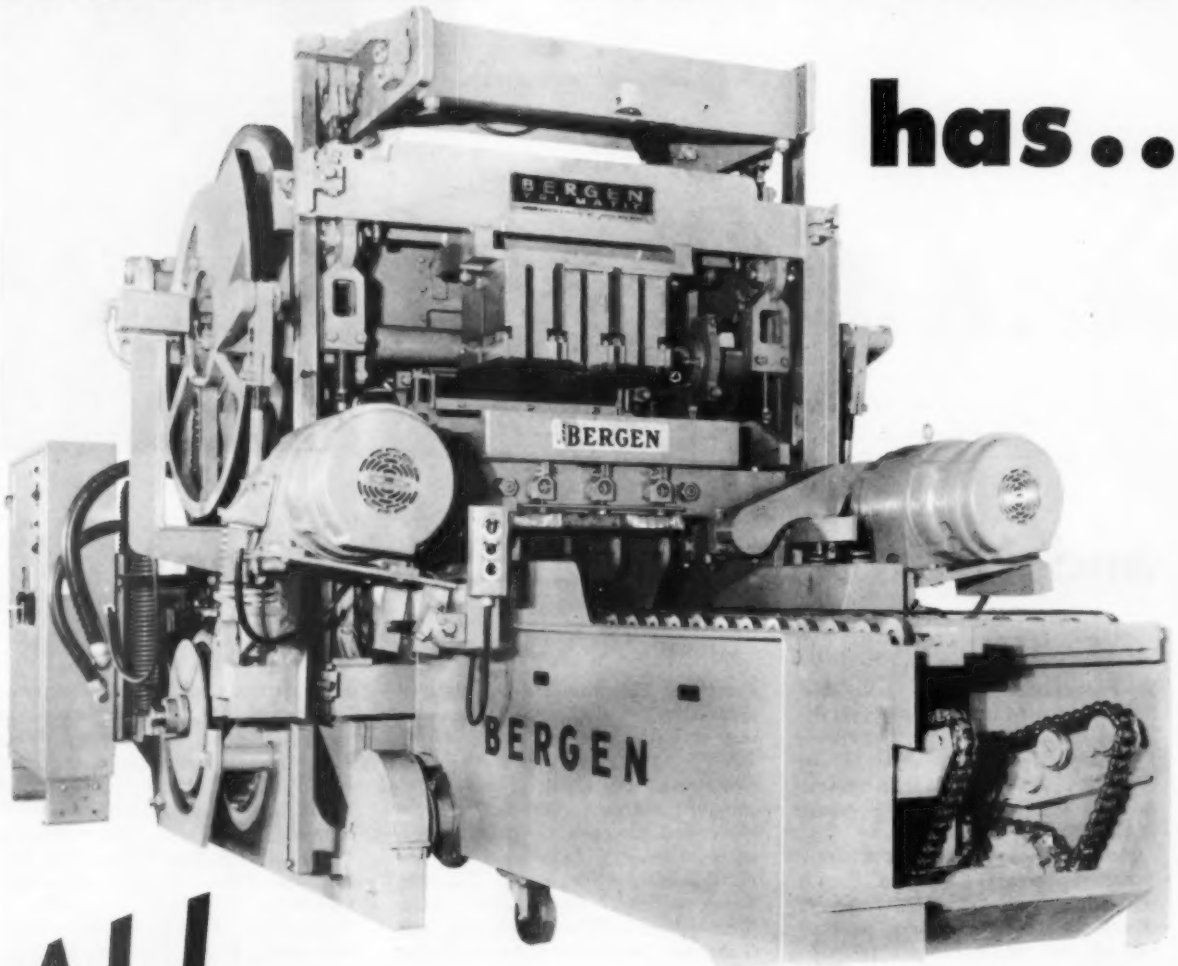
New Officers and Directors

Sam Paturzo, V. Paturzo, Bro. & Son, Baltimore, Md., chairman of the nominating committees (consisting of the three immediate past-presidents) was introduced by Mr. Peterson. He presented the slate of candidates for the forthcoming year, and the election took place. Philip Paolella, president, Plasticrete Corporation, Hamden, Conn., was named president. Also elected were three new directors, each for a term of five years. These were: Henry C. Quaritius, president, Nailable Cinder Block Corporation, New York; Cedric Willson, vice-president, Texcrete Industries, Inc., Dallas, Tex.; and Carl S. Spickelmier, managing partner, Spickelmier Company, Indianapolis, Ind.

The following were elected directors to fill the unexpired terms of Ellis E. Jensen, Janesville, Wis., and R. H. Radcliffe, Mobile, Ala., resigned: Emil Fehr, Fehr Concrete Products, Inc., Eau Claire, Wis., and Leonard Jones, Chandler Materials Company, Tulsa, Okla. John T. Pennachetti, Thorold Concrete Block Company, Ltd., Thorold, Ontario, Canada, was elected a director-at-

Kiel Auditorium, St. Louis, Mo., the meeting place of the 37th annual N.C.M.A. convention and 10th biennial Concrete Industries Exposition.

BERGEN TRI-MATIC has..



ALL these features!

- **HIGH PRODUCTION**
  6 mold cycles per minute
  10,000-8" equivalent units per day
  Unsurpassed, consistent performance

- **PROVEN DEPENDABILITY**
  Heavy Duty Construction Throughout
  Fool Proof Cam-and-Roller Operation
  Long, Trouble-Free, Economical Service

- **ZEROMATIC HEIGHT & DENSITY CONTROL**
  Uniform density, texture and size through positive and automatic control of aggregate feed and vibration time

- **FRONT PALLET FEEDER**
  Exclusive Harmonic Drive attains Shock-Free, high speed operation

- **HIGH-SPEED HOIST**
  Special design features for high production operation. Smooth-operating . . . minimizes operator fatigue

These features are incorporated in the BERGEN TRI-MATIC, but can be applied to your existing equipment. Write to Bergen and discuss your block plant plans with Bergen engineers.

BERGEN MACHINE & TOOL CO., INC., NUTLEY, N. J.

large for 1957, representing the National Concrete Products Association (Canada) in the usual exchange of directors with N.C.M.A.

President's Annual Report

Earl W. Peterson, president of the Ideal Cement Stone Company, Omaha, Nebr., the retiring president of the association, reviewed his year in office. He stated that in this period he had thoroughly appreciated the opportunity afforded to travel to all parts of the country, visiting and speaking at state and regional meetings and plants. He found in all areas, he said, a healthy attitude on the part of producers, sales personnel, and plant workers, which spells a bright future for concrete masonry.

Mr. Peterson paid high tribute to the various association committees, who, at their own time and expense, covered great distances to resolve the many questions confronting various groups. He also had high praise for the diligence of the headquarters staff, headed by Elmer Dienhart, executive secretary, and R. E. Copeland, director of engineering, William Markert, director of promotion, and Theodore Leba, who capably handled the work of the Washington, D. C., office of the association.

He said that 1956 has been a year of real achievement and growth within the association, particularly because it has seen the acquisition of a plot of ground destined to hold the new research laboratory and general office of the association, a project which has been diligently sought for the last decade. The personnel of the Chicago headquarters has been increased nearly 50 percent within the last year, and accordingly, the number of services rendered members have been proportionately increased. N.C.M.A.'s long-range blueprint is both bold and imaginative, Mr. Peterson declared, and to accomplish all that is planned calls for the whole-hearted support of the entire concrete masonry industry, which to him means the acquisition of many new members, the major task facing the association today. He cited the estimate of only one member for each 350,000 of the population to be far too low to be effective.

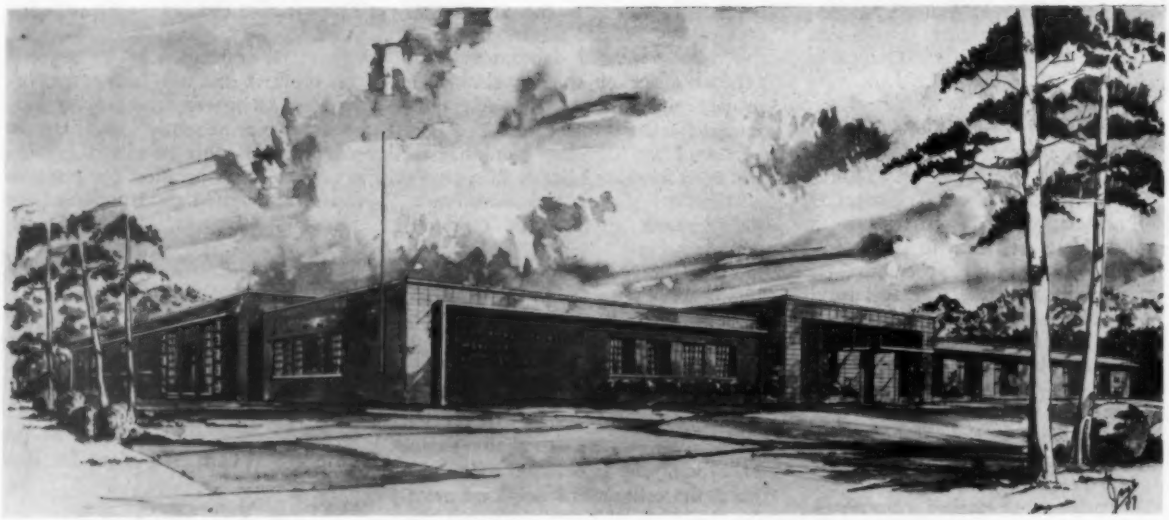
Mr. Peterson declared that the industry the association represents cannot stand on any present laurels, and cannot grow to deserved eminence unless it conforms to the ever-changing demands of its construction customers. If constant ways to improve the product are not fully explored, progress along the road could easily become permanently stalled. In pleading for more membership, and a greater appropriation for research facilities, he cited the fraction of the 5 percent of gross sales usually allotted for research by manufacturers, which N.C.M.A. now uses for this purpose, as being wholly inadequate. He compared a figure of $2.25 per 1,000 units, which is now used for general office, regional offices, and research by a competitive industry in the masonry field, as being much higher than is contemplated in the proposed N.C.M.A. budget for similar expenses.

Engineering Report

R. E. Copeland, director of engineering of N.C.M.A., presented the annual report to the membership on the engineering activities of his department for 1956. He stated these

The safety award trophies and their recipients (left to right): Ralph Reiner, George Hoffman, William Carter Sr., and Henry Quaritius, who presented the awards.

Presentation of trophies in the third annual N.C.M.A. safety contest: Henry Quaritius, chairman of the accident prevention committee, gives the Class A plaque to Ralph Reiner (left), Cleveland Builders Supply Company, Cleveland, Ohio; Class B to George Hoffman (center), Nailable Cinder Block Corporation, New York, N. Y.; and Class C to William Carter Sr. (right), Fischer Lime & Cement Company, Memphis, Tenn.



Architect's drawing of the new research and office building of N.C.M.A., to be built near West Chicago, Ill.

three primary functions of the department: (1) to develop technical information which will advance the promotion and use of concrete masonry on a technically sound and permanent basis; (2) to provide a central source of authoritative information and competent technical guidance on specifications, codes, and the design and construction of structures; (3) to create and stimulate, through our own efforts and the efforts of others, the technical progress which is essential to an expanding public acceptance of our products.

He said that five major research projects were under way in 1956: (a) comparison of three testing procedures for measuring block shrinkage (this study has been completed and a report has been circulated among the technical problems committee); (b) study of artificial carbonation of concrete masonry units with waste flue gas; (c) research on mortar bond; (d) research on high-pressure-steam curing; (e) studies of a relative humidity method of determining the moisture content of concrete masonry units.

Four technical bulletins were prepared and sent to members during 1956. These dealt with fire resistance of two- and three-core units, catch basin and manhole construction, pilaster design, and bulk cement losses. Two papers covering the use of fly ash and accelerated drying facilities, methods, and costs, were edited and distributed.

In addition to the foregoing, the engineering staff contributed several papers and reports to professional societies and prepared suggested changes in the specifications of various building codes, toward a better use of concrete masonry. The staff also participated in meetings of national technical societies and industry groups, afforded technical consultation, and made technical surveys to gather information. The expenditures of some $65,000 for the engineering budget was broken down by Mr. Copeland into a dozen activities. His report was completed with a summary of the technical work planned for the future.

Promotion Report

W. P. Markert, director of promotion, gave a highly educational discourse on the promotion activities of his department during the last year, describing how N.C.M.A. has stepped up the tempo of advertising in leading national trade, shelter, and architectural magazines. In an improved format for the association's *Pictorial*, entire issues are being devoted exclusively to a single subject, such as schools, churches, outdoor living, etc.

Mr. Markert discussed the *Reporter* and how it keeps the reader abreast of industry activities. The two publications, with other sales promotion literature developed, have a combined distribution of well over 200,000 copies. He listed the following as various promotion projects financed by members' dues: publicity, contact with other association, advertising, sales and merchandizing conferences, sales promotion tools, field trips, and new promotions such as the one on Shadowal, etc. He ended his talk with the statement, "Our aim is to increase the sales of your products."

Three of the speakers: Sigmund H. Westby, Portland Cement Association, Chicago, Ill.; Colonel Frank Reed, Office of the Chief of Engineers, Washington, D. C.; and R. E. Copeland, director of engineering, N.C.M.A., Chicago, Ill.

Washington Activities

Theodore Leba Jr., manager of the Washington offices of the association, presented a paper covering the activities of that branch. In drafting the report he said that he wished to em-

"The day I got **MAD** *enough to do something about my sales!"*

"Customers complaining about service—and dropping off because of it . . . drivers chasing all over the county, phoning in from every stop . . . trucks piling up dead mileage that was just money down the drain . . . finally I'd had enough—I decided to get off the fence and at least *try* 2-way radio.

"It's been just a year since my Motorola equipment was installed—sales and profits started climbing *from that day*. My dispatcher now keeps contact with every driver all day long. He can plan the work so waste mileage and time are held way down—and every truck makes *more* deliveries every day.

"Emergency calls get answered in just a few minutes. In fact our customer service is now the fastest and best in our area. Now that we've used it, we just couldn't do the job without our Motorola 2-way radio. Before I decided, I asked around, and everyone I talked to considers Motorola the best in the business. I guess they should be—they've had the most experience. So I picked Motorola 2-way radio and it doesn't cost—it Pays!"

FOR ACTION!

(TO READY-MIX OPERATORS)

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A SUBSIDIARY OF MOTOROLA, INC.
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The only complete radio communication service—by the outstanding leaders of the industry.

Walter J. Manhardt, Best Block Company, Milwaukee, Wis., chairman of the Building Committee, N.C.M.A., described the new research and office building.

phasize the progress made in the last year in advancing these objectives of the association: (1) to promote the use of the product, (2) to provide consulting service, (3) to keep the general office abreast of governmental policies, and (4) to assist individual members in problems to be handled at the national level.

He first described his work with the three military establishments, the Army's Corps of Engineers, the Air Force's Directorate of Installations, and the Navy's Bureau of Yards and Docks. The first of these, for example, has issued a specification allowing, for the first time, the use of split concrete block in their *Guide Specifications*. Concrete masonry is the prime material in this specification, and clay is the optional material.

The Air Force, Mr. Leba said, has the bulk of military construction appropriations. Both this branch and that of the Navy have been persuaded to convert many shore facilities from reinforced concrete to concrete masonry construction. In all, there is a $2,000,000,000 military-family housing market which is very keen, one in which, he feels, concrete masonry will get its share in the future. He described several competitive situations in which he succeeded in getting approval for concrete masonry.

Mr. Leba described public relations work done with some national unions, to give the officials the opportunity to promote concrete masonry directly with the members, in order to eradicate old time prejudices of working with concrete blocks. The studies on technical problems for the FHA, conducted through the Building Research Advisory Board, mentioned by him a year ago, have now been completed, and the results, favorable to concrete masonry, have been published.

The four honorary members of N.C.M.A. (left to right): Arthur B. Mays, Adrian, Mich.; F. J. Straub, New Kensington, Pa.; Paul M. Woodworth, Chicago, Ill.; and Roy L. Peck, Chicago, Ill.

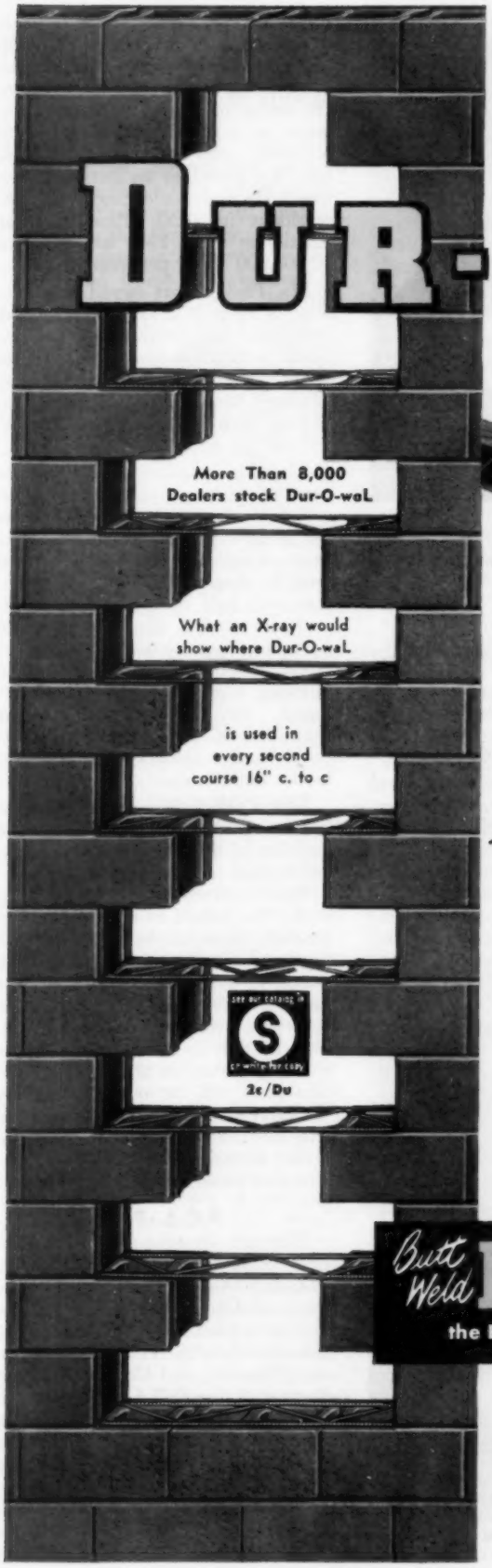
Administrative Activities

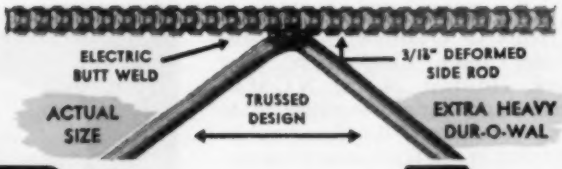
E. W. Dienhart, executive secretary of the association, made brief remarks on the general status of his office and placed any credit due for efficient administrative accomplishments on his staff, which he deemed to be highly deserving of praise from all members. He declared that the present budget is quite satisfactory for covering the scope of association work, but that it would require considerable upward revision to encompass the contemplated research work.

Mr. Dienhart reminded all present that the work of the association must constantly be handled by the younger members—many of these are sons of members—if it is to progress with the constantly changing demand of the construction fields. In this regard he feels that the younger member will ably carry on the increased tempo of keeping abreast of the demand. He thanked the membership for the full co-operation it had accorded him, during his term as administrative head of the group, and urged that the proposed program of enlarged research be carried out as a necessary item in maintaining even the present competitive position of the industry.

Left: George Neff, Neff Concrete Products Company, Danville, Ill., who presided at one of the technical sessions.

Right: Elmer A. Peterson, Rocklite Products, Ventura, Calif., who spoke on the need for quality control testing.





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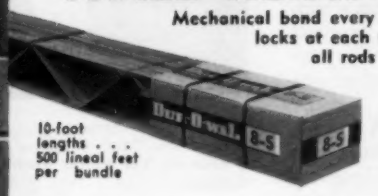
RIGID MASONRY WALL REINFORCEMENT

Mechanical bond every 8 inches of wall . . . Two mortar locks at each weld . . . Electric butt welds place all rods on a single plane; make possible uniform mortar joints . . . Trussed design causes side rods to work together . . . Conforms to ASTM std. A-82-34 for high tensile steel . . . 6-inch lap at splices develops continuity and maintains reinforcing strength . . . Deformed side rods for maximum bond strength.



10-foot lengths . . . 500 lineal feet per bundle

SELECTION TABLE

Wall Thickness	4 in.	6 in.	8 in.	10 in.	12 in.	13 in.
Extra Heavy Dur-O-wal	4-EH	6-EH	8-EH	10-EH	12-EH	13-EH
Wt. per 1000 lin. ft.	247 lb.	250 lb.	257 lb.	266 lb.	276 lb.	282 lb.
Standard Dur-O-wal	4-S	6-S	8-S	10-S	12-S	13-S
Wt. per 1000 lin. ft.	178 lb.	180 lb.	187 lb.	196 lb.	207 lb.	212 lb.

Furnished in either bright basic or galvanized steel. Specify Drip Section Dur-O-wal for Cavity Walls.

NOTE — In determining whether to specify Standard weight or Extra Heavy weight Dur-O-wal, comparisons in following table should be properly evaluated:

	Weight lbs. tensile steel per lin. ft	Surface bond area—sq. in. per lin. ft.	Number of mortar locks per lin. ft.
Standard weight Dur-O-wal	0.19	11.18	3
Extra Heavy Dur-O-wal	0.26	14.14	3

Butt Weld **DUR-O-WAL®** *with* RIGID TRUSSED *Design*

the Backbone of Steel for EVERY masonry wall

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Dur-O-wal Div., Cedar Rapids Block Co., **CEDAR RAPIDS, IA.** Dur-O-wal Prod., Inc., Box 628, **SYRACUSE, N.Y.** Dur-O-wal of Ill., 119 N. River St., **AURORA, ILL.** Dur-O-wal Products of Ala., Inc., Box 5446, **BIRMINGHAM, ALA.** Dur-O-wal Prod., Inc., 4500 E. Lombard St., **BALTIMORE, MD.** Dur-O-wal Div., Frontier Mfg. Co., Box 49, **PHOENIX, ARIZ.** Dur-O-wal, Inc., 165 Utah St., **TOLEDO, OHIO**

Safety Awards

Henry C. Quaritius Jr., Nailable Cinder Block Corporation, New York, chairman of the N.C.M.A. accident prevention committee, made the presentation of the three trophies awarded in the third annual association-sponsored safety contest for the 12-month period ending July 31, 1956. Full details of this contest were described in the March issue of the CONCRETE MANUFACTURER (page 328), which listed the winners of the three production categories, as well as the names of the 46 companies which have worked three years, two years, or one year, without an accident, since the inception of the contest. The 101 plants which participated in the 1956 contest worked a total of 4,700,508 man-hours, with only 205 lost-time injuries.

Winner of the Class A award (including plants producing over 5,000,000 units) was the Cleveland Builders Supply Company, Cleveland, Ohio. Ralph Reiner, plant superintendent, accepted the trophy on behalf of his company. The Class B award (for plants producing between 1,500,000 and 5,000,000 units) went to Nailable Cinder Block Corporation, New York. The trophy, presented by Mr. Quaritius, was accepted by his company co-worker George Hoffman, sales manager. For the third successive year, the Concrete Products Division of the Fischer Lime and Cement Company, Memphis, Tenn., won the Class C award (for plants producing less than 1,500,000 equivalent units). William Carter Sr., plant manager, accepted the trophy for his company.

The 46 finalists received N.C.M.A. certificates of achievement in safety. In addition, a personal gift will be given each eligible employee, in recognition of his outstanding accomplishment in safety. The awards were based on block output, overall safety attained, and total man-hours worked. In the case of the Class A award, Cleveland Builders Supply Company produced nearly 10,000,000 8-in. equivalent units in the one-year period without an accident, to win this trophy. In terms of production, this was the best safety performance ever reported by a contestant in the N.C.M.A. contest. It is interesting to note that in this case the company is self-insured, the cost of all accidents being paid out of company funds. Just prior to the award of the safety trophies, a showing was made of the National Safety Council film *Safety Doesn't Happen*, a highly interesting and educational film which is available for use by any producer. It can be obtained by writing the National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

Professor G. Herbert True, University of Notre Dame, South Bend, Ind., who presented a dramatic talk on the creation of ideas in business.

President-Elect's Greeting

In a continuation of the general session of the program, Earl Peterson, retiring president of the association, introduced Philip Paolella, the new president, to the meeting. Mr. Paolella has been identified with the block industry since he was 10 years of age, working after school to help his father, who now heads the Plasticrete Corporation, Hamden, Conn. He began his career with the company on a full-time basis in 1936, handling sales and office duties; later he served as an outside salesman. He was made executive vice-president in 1950. Production at Plasticrete since 1940 has risen to 12,000,000 units per year.

Richard J. Frazier, Anchor Concrete Products Company, Buffalo, N. Y., chairman of the subcommitee on high pressure steam curing, was moderator on the panel discussing this subject.

Mr. Paolella has served as chairman of both N.C.M.A.'s promotion committee and local, state, and regional association committee, and he is past president of the New England Masonry Manufacturers Association. He has been a director of N.C.M.A. for the last ten years.

After his installation Mr. Paolella presided at the general session, and called to the attention of members the present position of the concrete masonry industry, which he termed critical, despite the fact that it enjoys over half of the masonry construction market. He said that there have been more than a few instances lately, in which concrete blocks, once enjoying a preference, are now outlawed. He reminded his listeners that in 1956 the industry had suffered its first setback in production in the last 20 years.

Other deficiencies in progress he has noted include the following: the question of economy of block today, as against poured concrete, prestressed concrete slabs, and tilt-up walls; the failure to sell the housing market; price cutting among block producers; and cracking of concrete masonry walls. He reminded the members of his audience that they represent, relatively, a small industry, and that in the fiercely competitive period that lies ahead, individual producers will be overwhelmed by the large manufacturers of competitive materials unless they band together to maintain a spot in the construction phase of our economy.

P.C.A. Film

The first showing was made of a new institutional film, *The Concrete Masonry Story*, prepared by the Portland Cement Association in cooperation with the N.C.M.A. It was introduced by S. H. Westby, manager, Housing and Cement Products Bureau of the P.C.A. The film, illustrating the progress which concrete masonry has made over the last few decades of increasing use, and portraying many new possible adaptations for the future, will be available to members of N.C.M.A. for showings to local groups of archi-

tects, builders, contractors, educational institutions, and others to whom such promotion is warranted.

Block Performance in Military Work

Colonel Frank Reed, chief, structural section, construction advisory division, office of the Chief of Engineers, Washington, D. C., spoke at length on the *Performance of Concrete Masonry in Military Construction.* The Corps of Engineers recently issued a revision of their Guide Specification for masonry, in which the use of concrete brick and split block is spelled out with such clarity that there will be no doubt, Colonel Reed said, that these products will be greatly used by the C. of E. field offices in the future.

These specifications contain design criteria and instructions on how much and where to incorporate crack control measures in various types of structures. Such requirements for control joints and wall reinforcement are so reasonable and logical that these concepts should be promulgated in private design circles. In the last year, concrete masonry was not excluded from the specifications of any military project, and it is considered now the primary material in the Guide Specification.

Proposed Laboratory and Office Building

Walter J. Manhardt, Best Block Company, Milwaukee, Wis., chairman of the building committee of the association, related the steps which had been taken by his committee in obtaining the 4¾-acre site on which the new research laboratory and office building of the association will shortly be constructed. It will be the world's largest laboratory given exclusively to research in concrete masonry. The site is at the junction of Highways 30 and 59, near West Chicago, Ill., some 29 miles due west of Chicago.

R. E. Copeland, director of engineering, showed slides of the map location, the property, and revised drawings. Plans call for the building to be divided into office and laboratory space covering approximately 14,300 sq. ft. area, including a partial basement. In addition to private and general offices, the office wing would include a conference room and a library. Laboratory facilities would contain a machine shop, small block machine and batching apparatus, with areas set aside for structural, chemical, and precision testing laboratories.

Max H. Miller, Wichita, Kan., a member of the building committee, declared that the association needs the new building, as adequate research on concrete masonry cannot be done except by the association's own forces. He added that many problems must first be resolved before any definite action is taken. In no event will the project proceed until a financial program has been agreed upon; and the undertaking will be submitted to the entire membership for approval.

Ideas That Spark

A dramatic, thought-provoking talk was given by Professor G. Herbert True, special marketing consultant to several large companies, and assistant professor at the University of Notre Dame, South Bend, Ind., as he presented *Have You Had A Profitable Idea Lately?* He graphically demonstrated various ways to become idea inventive, release fresh viewpoints, and put a new spark into your business and professional life. His talk proved an interesting diversion from the series of subjects devoted strictly to the business of producing better concrete units.

Technical Session

Robert N. Dikkers, assistant engineer, N.C.M.A., and Professor Edwin L. Saxer, University of Toledo, presented a talk on *Tests of Flexural Strength of Concrete Masonry Walls,* discussing some of the factors which previous tests have indicated to be important. Some test results covered investigations conducted by the University of Illinois in 1932 and by the National Bureau of Standards in 1938 and 1939, in which lateral loads have been applied to plain wall panels, causing them to bend in a vertical direction. Other wall test results discussed were taken from an investigation of several years ago at Iowa State College. When compared with the first series, these tests showed the relationship of the bonding pattern to the flexural strength of unreinforced concrete masonry walls. Mortar bond tests now being conducted at the University of Toledo seem to indicate the advantage and necessity for specifying high-strength mortars to resist lateral forces.

Professor Saxer showed slides illustrating the above tests, and enumerated the main factors which have an effect on the flexural strength: the bonding pattern, the mortar bond strength, compressive loads, the physical properties and shape of the units, and physical properties of the mortar.

Maintenance of Conveyors

A. S. Purmort, Hewitt-Robins, Inc., St. Louis, Mo., showed slides and described the selection and maintenance of belt conveyor systems used in block plants, in handling aggregates. He said that it was no longer necessary to design or engineer a conveyor of the sectional type, as modern handbooks now contain data on such conveyors as to width, speed of belt, and horsepower required, when the tonnage, the distance, and the incline or lift, is known. It is the component parts of this type of conveyor that will determine whether it will cause trouble or run for years with little maintenance. These features include the frame work or structure, the trough-

Kenneth Kerr and Morgan R. Butler, Butler Bin Company, Milwaukee, Wis., with friends, Mr. and Mrs. J. S. Staley, Staley & Company, Merion, Pa., at the concrete Industries Exposition.

ing idlers, the head pulley section, the tail pulley, and the loading hopper.

Quality Control Testing

Elmer A. Peterson, Rocklite Products, Ventura, Calif., in his paper declared that production quality control must be applied to concrete masonry if the industry is to grow and prosper. He said that today quantity too often governs at the expense of quality.

He said that such control starts with the design and erection of the plant, the different kinds of machinery to be installed, and the production flow to be followed. The block maker must decide such matters as water-cement ratio, cement-aggregate ratio, proportioning of fine and coarse aggregates, mixing time, method of curing, curing cycle, possible autoclaving, cubing, etc. Quality, he declared, can only be determined by testing, meaning that compression tests must be made on samples from each day's run, and corrections should be made on the run the following day.

In his opinion, specifications for blocks are getting much more rigid; hence, it is necessary that producers know how they stand as far as their product is concerned. What the block tested at 24 hours age indicates what it will test at 28 days at a laboratory.

Automation in the Block Industry

The increasing use of automatic control devices in the block manufacturing industry was described in a paper on this subject presented by Richard L. Coleman, The Carter-Waters Corporation, Kansas City, Mo. Mr. Coleman called attention to the fact that the industry has for many years utilized to a great extent automation in handling its product, compared with the use of this medium in other segments of the concrete industry.

Naturally, the degree of automation in any plant will vary with the size of the plant, and the extent to which one's neighbors make use of the modern devices for measuring the moisture in aggregates, for weigh batching, proportioning, using electronic or manual controls, pallet returns, off-bearers, cubing machines, etc. Unless a producer is forced by competitive conditions to streamline his production processes, he will more often consider that to do so would unnecessarily increase his costs. Quite often, on the other hand, when the savings of automation expertly applied is investigated, it will be found its adaption will result in unsuspected savings that will make the difference in profit and loss of an operation.

C. E. (Sam) Lovewell, sales manager and service engineer, Chicago Fly Ash Company, Chicago, Ill., who described a concrete masonry swimming pool.

In the last two years, Mr. Coleman's company has applied automation at every point in the manufacturing process where it would lower costs or make a higher quality unit. They have also gone into pre-casting and prestressing of concrete structural members, these processes requiring a high degree of use of automatic devices. It was his opinion that no plant can afford to continue with manual operation if a machine exists which will do the job quicker and more economically.

Damp-proofing Treatment

Joseph Sidlovsky, chief technical service representative for water-repellents, Union Carbide and Carbon Corporation, New York, described the need for masonry water repellents, and the use of wax and stearate colorless waterproofing materials. He presented a technical discussion on the composition and mechanism of water-repellents, the concentrations used, and their effectiveness on different types of masonry materials. He also covered the testing of different silicone water repellents on specimen walls for which close control of the conditions of application had been observed and recorded.

Carbonation Shrinkage

Carbonation and its relation to the shrinkage of concrete block was covered in a talk by W. H. Kuenning, senior development engineer, Portland Cement Association, Chicago, Ill. He said that this subject is being given much serious study of late, since this factor in block shrinkage was first discovered by P.C.A. personnel in 1954, during tests on the volume stability of units steam-cured at atmospheric pressure.

It was found, he said, that when dried at constant relative humidity, the units lost weight while shrinking; later, they began to gain weight as they continued to shrink. This phenomenon, he asserted, stemmed from a chemical reaction between the carbon dioxide in the air and the hydration products from the cement. Such results appear more extensive in lightweight than in heavyweight units. A large part of the shrinkage previously attributed to water may actually be caused by carbonation. Such shrinkage varied from 100 to 300 millionths of an inch, on block exposed at 50 percent humidity.

Mr. Kuenning said that carbonation occurs most rapidly when blocks have a moisture content in equilibrium with an atmosphere of 40 to 60 percent humidity, and much less develops in wet or very dry masonry. High-pressure-steam-cured blocks, made without silica additions, are extremely volume-stable, whereas those made with large amounts of silica are more responsive to carbonation than other units, when exposed to high concentrations of carbon dioxide. He pointed out that autoclaved block, with or without silica, are highly resistant to carbonation shrinkage in the normal atmosphere.

On this same subject, a paper entitled *Artificial Carbonation as a Preshrinking Treatment* was presented by Henry Toennies, development engineer, N.C.M.A. The greater drying shrinkage volume stability reported for concrete masonry after exposure to carbon dioxide gas (carbonation) is of interest to all producers, as a possible method of pre-shrinking block before their delivery.

Mr. Toennies stated that several methods of obtaining carbonation are apparent. Units might be exposed, he said, to an atmosphere of high CO_2 concentration, this CO_2 having been purchased, or separated out of the flue gases from the plant boiler. Reports indicate, however, that 1 lb. of CO_2 is needed to completely carbonate an 8-in. unit. This has caused the N.C.M.A. to concentrate present activities on the possibility of partially carbonating block by means of direct contact with flue gases containing from 10 to 18 per-

cent CO_2. Such a procedure would require the minimum of equipment.

A program of research on carbonation is now in progress at the University of Toledo. In these tests an increase in weight and reduction in drying shrinkage were observed with respect to units carbonated immediately after steam curing for 3, 6, and 9 hours, in an atmosphere of 5 to 10 percent CO_2, at temperatures of 150 to 500 deg. F. Lack of suitable means of measuring the carbonation makes proper evaluation of these tests difficult.

High-Pressure-Steam Curing Panel

Richard J. Frazier, Anchor Concrete Products, Inc., and chairman of the N.C.M.A. subcommittee on high-pressure-steam curing, presided as moderator of a panel which discussed this subject. Members of the panel were Edmond H. Brooke, Washington, D. C.; W. J. Brull, Duluth, Minn.; John Buehner, Salt Lake City, Utah; J. C. Fountain, Greggton, Tex.; Noel D. Harter, Oklahoma City, Okla.; Leonard Jones, Tulsa, Okla.; Victor Paturzo, Baltimore, Md.; and Clyde Stewart, Chicago, Ill.

A compilation of questions which had been submitted by the general membership for submission to the panel included costs of installation, operation, and finished product; types of doors, gaskets, and boilers; mixes, yields and additives; curing cycles, whether one- or two-phase; physical characteristics and performance of high-pressure-steam cured units; corrosion; crazing cracking; and feasibility of change-over to high-pressure-steam curing.

Time limitation prohibited answering all the questions which had been submitted, but considerable discussion ensued from the floor, indicating the intense interest in this subject. With the exception of Mr. Jones, all members of the panel represented plants using the one-phase system of high-pressure-steam curing. It is hoped that some publication of the large number of answers to the questions will be made in the near future. This should more clearly define approved practices to be followed in this system of curing.

Pumice Meeting

A meeting of the Pumice Institute was held during the course of the N.C.M.A. convention. This was attended by some 30 or more members, who discussed at length various problems and their possible solutions, as dictated by research now being carried out by Professor Saxer, University of Toledo. He spoke on the possibility of developing a "cracking modulus" which would balance shrinkage of pumice block against a "stretching" characteristic of such units, to prevent cracking of the wall. Other determinations he has made show the advantages of pumice units to include light weight, higher insulation, high fire resistance, and the possibilities in a pozzolanic action basically developed in pumice aggregates.

Frank De Felice, engineer for Maule Industries, Inc., West Palm Beach, Fla., told how his company, using pumice imported from Greece, has produced over 5,000,000 such blocks per year. Many of these units have been sold in colored form, and others for the purpose of fire retardance in specific cases. Gifford Dundas, Lewiston, Ida., who manufactures pumice units, related to the meeting the details of his recent trip to Europe, where he studied the progress of pumice units used there in all types of construction. The date and place of meeting of a semi-annual meeting of the Pumice Institute will be announced later.

"Shadowal" Masonry

Great interest was shown in the report by William P. Markert and Jack R. Grenz of N.C.M.A. on "Shadowal" exposed concrete block, which holds so much promise for the industry. The original announcement of this "new look" block was one of the highlights of the 1956 convention in New Orleans, and it is now nearly perfected. This standard modular concrete block can give hundreds of different effects laid up in a wall. It involves the introduction of a 3/8-in. recess in the face of a block, starting 3 13/16-in. from the end. This recess can be made on either the left or right side or on both sides.

Sample walls were laid up and photographed prior to the convention, and color slides of these were shown illustrating some of the many attractive and distinctive color effects both exterior and interior, which can be obtained. The showing of these slides was accompanied by a 2-way conversation between the speakers, pointing out the features and advantages of this product. It was also announced that this wall was a feature of a recent home show in Wichita, Kan., where it made a very favorable impression. A house incorporating Shadowal units will be completed in Milwaukee in June.

N.C.M.A. is planning a full-scale publicity campaign on Shadowal soon. A complete promotional folder has been prepared which will be sent to all members, along with information on the manufacturing process. The attachments for making the block will be made available to members at nominal cost by machinery manufacturers. The association also plans to advertise this product in home, architectural, and other magazines beginning in May and will arrange for articles in appropriate trade magazines.

Concrete Masonry Pools

The features of a relatively undeveloped but potentially significant market for concrete masonry producers was presented in a discussion by C. E. Lovewell, sales manager and service engineer, Chicago Fly Ash Company, on *Concrete Masonry Swimming Pools.*

Comments on the effort expended by the speaker in gathering cost information following his decision to construct a swimming pool brought out the fact that quotations from pool contractors listed in classified directories were well beyond the means of the average person. Further study led to the selection of concrete block construction, with which a plastic pool liner is used. This was based on a cost of one-half or less of the average pool contractor's quotation.

Slides were shown depicting the construction in progress of a concrete masonry pool on Mr. Lovewell's property in southern Wisconsin. Heavy 8-in. equivalents—made with 20 percent fly ash by a member of the association—were used for walls and buttressing, and were laid with Duro-Wall reinforcing in all joints. Pool dimensions are 18 by 34 ft., with uniform bottom grade from a 3- to 7½-ft. depth.

Since bond-beam block were not available, the contractor sawed standard units into a channel shape for the top course. Joints were flush-cut rather than tooled and were later rubbed with a brick to knock off mortar projections prior to installing the plastic liner. No concrete was required for the pool bottom, which is made of tamped sand.

Mr. Lovewell noted that his pool involved, along with the concrete masonry, a plastic liner, plumbing fittings, filter, ladder, coping, and other items, all of which are available to the concrete masonry producer in a kit. Noting that the cost of such construction is comparable to that of a new car in the medium price range, he pointed out that as a block maker, a producer can qualify as a dealer for this pool kit.

It was suggested that by taking

the mystery out of pool construction, and showing his contractor associates that it differs very little from building a basement, the block producer can bring swimming pools within the economic reach of the average individual. Expert form builders and intricate steel setting are not required, and competent block layers are available anywhere.

The potential market was emphasized by quotations from a recent article in one of the country's leading daily newspapers. This material brought out the fact that swimming pools are finding increasing acceptance in the middle-income bracket. In 1956, it was reported, 33,000 pools, representing an investment of $35,000,000 were built. It is estimated that 1957 will see more than 45,000 pools constructed at a business volume of $500,000,000, and almost two-thirds of the pools are of the backyard variety.

M.C.A.A. Masonry Promotion

Fred H. Daues, president of the Masonry Contractors Association of America described *M.C.A.A.'s Plan for Promoting Greater Use of Masonry Construction.* This association, with 2,500 active contractor members, is doing much to train apprentice bricklayers and in other ways is co-operating with N.C.M.A., the Portland Cement Association, and other groups. Mr. Daues also described the growing number of Unit Masonry Associations and used the St. Louis group as an example. This organization promotes the use of all types of masonry and its members are producers and users of these products, architects, etc. According to the speaker, most of the much-publicized new building materials are only passing fads. He mentioned the change of the new Air Force Academy at Colorado Springs, Colo., from steel panels and glass to masonry and glass construction.

So much information of importance and interest to our readers was presented at this convention that we exceeded the amount of space assigned to it. As a result, we found it necessary to omit from this issue several important papers and discussions, including a workshop session on industry problems and reports by the secretaries of various state associations and the National Concrete Products Association (of Canada). All of this material will be published in the next (May) issue of the CONCRETE MANUFACTURER —The Editor.

Concrete Improvement Board Of Detroit Elects Officers

The Concrete Improvement Board of Detroit, Mich., an organization of producers of ready-mixed concrete, cement, and allied industries, held its annual meeting recently and elected the following officers for a one-year term:

Chairman of the board of directors, W. G. Irmscher, Peerless Portland Cement Corporation; treasurer, M. E. Honderich, Thomas E. Currie Company; and secretary, Donald H. Ziegler, Cooper Supply Company. The following men were elected directors: C. Dambrun Jr., Pittsburgh Testing Laboratory; J. N. Fink, chief structural engineer, Department of Buildings and Safety Engineering; Ed Frank, Koening Coal & Supply Company; R. L. Freeman, Huron Portland Cement Company; C. A. Graether, Smith, Hinchman & Grills; C. L. Johnson, Johnson & Anderson; E. C. Levy Jr., E. C. Levy Company; J. Morrow, Thomas E. Currie Company; Paul Rice, American Concrete Institute; D. Rossi, Darin & Amstrong; C. M. Weinheimer, Detroit Edison Company; and Ben Wilk, Standard Building Products Company.

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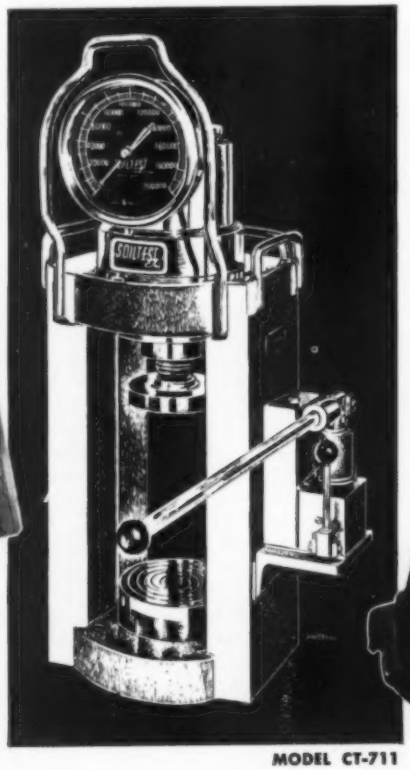

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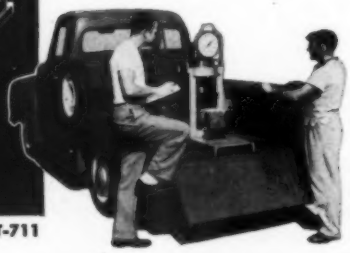

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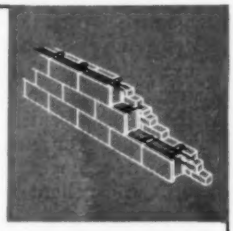

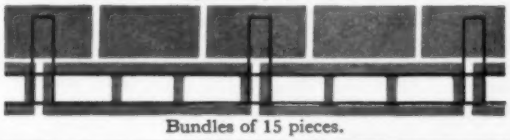

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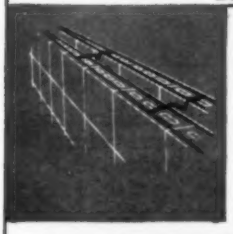

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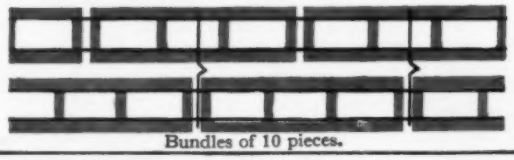

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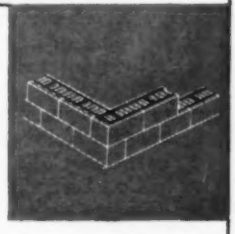

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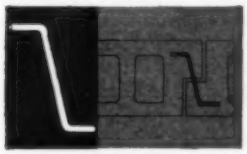

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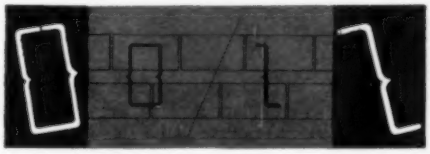

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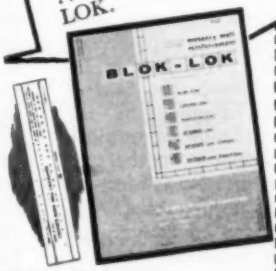

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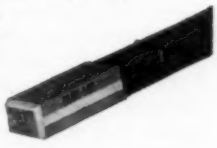

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N.R.M.C.A.

(*From page* 260)

with colored slides. He described his association's mat-service and news-release campaigns, undertaken on a national basis through the organization's numerous district offices. He also touched upon the conduct of a continuing campaign *via* short courses, educational films, etc., which is stressing the importance of quality as the prime essential of the ready-mix product over and above its other familiar advantages. He described in detail the excellent results obtained in a program promoting street and alley paving using ready-mix, in four test cities—Nashville, St. Paul, Spokane, and Akron.

Business Prospects *Will the Ready-Mixed-Concrete Producer Be Looking for Business in 1957?* He certainly will, if the consensus of opinion in a panel discussion on the subject is borne out. The four panel members included the moderator, Quentin W. Best (Consolidated Rock Products Co., Los Angeles), Geo. C. Eady (Consumers Supply Co., Louisville), Harold M. Lacy (Dallas Concrete Co., Dallas), and Bert Milling (Underwood Builders Supply Co., Louisville).

With housing starts off 10 percent, Mr. Best feels that his company's sales force will be beating the bushes for concrete business this year in the Los Angeles area. With 40 ready-mix companies operating 50 or 60 batch plants served by 900 truck-mixers in Los Angeles alone, competition appears more keen right now than at any time since the close of World War II.

Mr. Lacy believes Texas producers will be on the hunt for business. "And we expect to find it," he declared. He reported that he had surveyed opinion among 35 representative concrete producers over the Lone Star State and found that about 40 per cent were highly optimistic over 1957 prospects, the rest ranging from mildly optimistic to downright pessimistic.

In the Louisville area, Mr. Eady expects the ready-mix industry will fare pretty well in 1957. He cautioned operators, however, against a policy of "over-selling" since in his opinion the extra sales cost involved may reduce profits on such jobs to the vanishing point.

"Off the posteriors—out on the territory" should be the slogan for the batch-plant operators in the South, in Mr. Milling's opinion. He reported that the construction outlook, while generally good, is spotty in the gulf area and will definitely require a "hard-sell" job for most producers.

Unemployment Insurance At the closing session J. Richard Glade, executive vice-president of the Inter-Association Unemployment Insurance Committee observed with some alarm the ever-increasing amounts employing organizations have been required to pay to support unemployment insurance benefits, the Social Security program, disability allowances, and supplementary plans for the benefit of workmen in times of idleness. While the Reuther proposal for a guaranteed annual wage may not have succeeded in fact, the results are approaching the Reuther goal as various beneficial programs are stepped up. He warned his listeners that company contributions to these various plans have risen so alarmingly that, for some, it may represent the difference between operating at a profit or at a loss. Management must be ever vigilant, said Mr. Glade, if it is to avoid being legislated out of business by union-sponsored moves in this direction. In the current session of the California Legislature, for example, he declared that no fewer than 160 bills have found their way into the legislative hopper, each affecting unemployment insurance in some degree.

Group Bargaining Richard W. Lund, an attorney with the firm of Latham & Watkins, Los Angeles, said that organization by employers for effective group bargaining with the labor unions has become essential to survivorship. United effort on the part of management, either as an incorporated trade group or on an independent industry-wide basis is the only sound, recognized means under the Taft-Hartley Act for legal, proper, and effective collective bargaining. Mr. Lund cautioned that management's representatives can function properly only if they subscribe to the broad outlook of benefits to the industry in general; selfish motives must be forgotten in the interest of industry harmony in arbitrating the issues involved.

Because of space limitations in this issue, it is necessary that the reports on several technical papers and Mr. Walker's report on the engineering divisions of both associations, made to the board of directors, be carried over until the May issue of the CONCRETE MANUFACTURER.

Prestressed World Conference Planning Extensive Program

Wayne F. Palmer, Mobile, Ala., designer of the world's longest highway bridge, will be among the distinguished speakers addressing the delegates attending the World Conference on Prestressed Concrete, sponsored by the University of California, at the Fairmont Hotel, San Francisco, July 29 through August 2.

Internationally-known as a consulting engineer on numerous large-scale construction projects, Mr. Palmer will tell conference delegates how his firm's design for Louisiana's 24-mile Lake Pontchartrain Causeway utilized mass production methods which facilitated the completion of the project in 14 months.

Although the practical application of prestressed concrete was pioneered in Europe during World War II, American know-how in the field of mass production, typified by the swiftly-completed Louisiana project, has stimulated response on the part of numerous prospective conference delegates from Europe, Asia, Australia, the Americas, and several of the Iron Curtain countries.

With the pooling of scientific, engineering, and manufacturing knowledge and experience as its primary purpose, the conference will feature 70 papers on precast prestressed members, prestressed thin shells and slabs, research, and design and construction in various countries. Panel discussions will be conducted in materials, techniques, production, and design.

An entire day will be devoted to visiting construction jobs and prestressing plants in the San Francisco Bay area. There will also be commercial exhibits of machinery, equipment, tools, prestressing wires, anchorages, and related materials by American and foreign suppliers.

Similar international congresses were previously held in London and Amsterdam. This year's San Francisco conference will be held concurrently with the third annual meeting of the Prestressed Concrete Institute. Other technical societies co-operating will be the International Federation de la Precontrainte, the American Concrete Institute, the American Society of Civil Engineers, the American Association of State Highway Officials, the American Railway Engineering Association, the American Institute of Architects, and the Portland Cement Association.

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Walter H. Price, new A.C.I. president, with a drawing of one of the Colorado projects of the Bureau of Reclamation.

Annual Meeting Of A.C.I. in Dallas

features prestressed and lightweight concrete

Another ON THE SPOT Report

THE annual convention of the American Concrete Institute, held on February 26, 27, and 28 at the Statler-Hilton Hotel, Dallas, Tex., paid detailed attention to the expanding field for precast, prestressed concrete and the growing use of lightweight aggregates. The registration of nearly 700 included men from across the United States from Maine to Washington, from Canada, and from some eight foreign countries. The well arranged program of technical papers retained the keen interest of large audiences at each session. Meetings of 24 technical committees were held on the Monday preceding the convention proper. The newly elected president, Walter H. Price, Bureau of Reclamation, Denver, Colo., was installed at a luncheon on Wednesday.

At the opening session Dean Frank Kerekes, president of A.C.I., presented R. L. Thornton, mayor of Dallas, who extended the city's welcome in a dynamic and captivating style. Under a council-manager form of municipal government Dallas has had great industrial expansion, with a population increase of 43 percent since 1950. The degree of initiative in the community was demonstrated by the erection 35 years ago of the 19-story Medical Arts Building, which has a reinforced concrete frame. This structure was at that time the tallest building in the Southwest. Mayor Thornton stated that his city is still building for the future.

Two proposed new standards were submitted to the meeting. The first was a recommended practice for the evaluation of compression test results of field concrete, which was presented by William A. Cordon, Bureau of Reclamation. The report outlined the use of statistical methods as tools for assessing the results of strength tests. It also pointed out that such information is an aid in refining design criteria and specifications. The report discussed the numerous variations in characteristics of ingredients in concrete which may contribute to variations in strength. Criteria were offered for use in establishing specifications and maintaining a required uniformity. The report was ordered to letter-ballot for approval by the membership of the institute.

New Detailing Manual The second proposed standard, presented by Raymond C. Ruse, consulting engineer, Toledo, Ohio, provides recommended methods and standards for preparing drawings for the fabrication and placing of reinforcing steel in concrete structures. There are at present two standards for detailing such structures, A.C.I. 315-51 for buildings, and A.C.I. 315A-53 for highway structures. Mr. Ruse indicated the large undertaking involved in co-ordinating and consolidating the two standards into a single document which includes provisions of the A.C.I. Building Code. The report was also ordered to letter ballot; if it is approved, as anticipated, copies should be available about June 1.

Hot Weather Concreting A progress report *Hot Weather Concreting* was presented by Stanton Walker, National Ready Mixed Concrete Association, Washington, D. C. The committee's task was to review information on the effect of hot weather on the characteristics of fresh and hardened concrete, and to develop a recommended practice for controlling ingredients, batching, mixing, transporting, placing, and curing concrete during hot weather. The present progress report discussed factors in minimizing hot weather difficulties and methods of keeping concrete temperatures down by controlling the temperature of the in-

Phil M. Ferguson, new A.C.I. vice-president (left), and Douglas McHenry, senior vice-president.

gredients and subsequently protecting it during delivery and placement. The importance of handling test specimens in accordance with standard procedures was emphasized. Mr. Walker invited comments and suggestions for consideration by the committee in preparing a recommended practice for presentation at the next A.C.I. convention.

Concrete Coatings Another committee report on *Coatings for Concrete* was presented by G. E. Burnett, Bureau of Reclamation. The report describes several types of paints (other than cement-base paints) for coating exposed surfaces of concrete and block. Guides are included for the selection of such coverings as linseed oil, varnish, lacquer-base, and rubber-base materials, and procedures are given for preparing the surface and applying the paint. Damp-proofing and water-proofing methods are discussed briefly. The report also includes a list of federal specifications for paints suitable for concrete.

Prestressing Code The entire afternoon session was devoted to the presentation and discussion of an A.C.I.-A.S.C.E. Joint Committee report on *Recommended Practice for Prestressed Concrete*. Thor Germundsson, Portland Cement Association, chairman of the committee of 29 members representing the two sponsoring organizations, presided. Printed copies of the 56-page tentative text were distributed. These copies carried the following notation: "This copy . . . was prepared to provide a basis for discussion at the 1959 A.C.I. Convention and must not be used for any other purpose."

Mr. Germundsson briefly reviewed the history of this activity as emanating from a conference on the theory of prestressing, held at Massachusetts Institute of Technology in 1951. The task of co-ordinating the ideas of American engineers, regarding safe criteria for prestressed concrete members, was headed by the late A. C. Cummings, who was active in applying the prestress method to large members, such as spun piles. The committee presented a preliminary report at the 1956 A.C.I. convention and invited comments and suggestions. Responses have been received from 175 men, indicating the widespread interest in the project. Every point on which two or more comments were received was re-submitted to the committee. The resulting revisions were incorporated in the current report. Mr. Germundsson stated that all future comments at the meeting, or submitted within the next 30 days, would be considered, with the intention of drafting an Official *Recommended Practice* for presentation at the 1958 A.C.I. Convention.

It was pointed out that the forthcoming report would constitute a recommended practice for the design and production of prestressed members, and was not a building code or specification. The object of the report is to recommend those practices which will result in prestressed concrete structures that are comparable in safety and serviceability to construction with other materials now commonly used. The present progress report is confined in scope to structural members involving linear prestressing. Most of the recommendations relate to flexural members, such as beams, girders, and slabs. The recommendations are intended to apply to both buildings and bridges.

Design Criteria The papers at the morning session on the second day all referred to construction. A significant discussion of *Design Criteria for Modern Concrete Specifications and Control* was presented by Edward A. Abdun-Nur, consulting engineer, Denver, Colo. Some of the ideas in the paper were first developed in the planning of the Illinois turnpikes. The paper pointed out that accelerated construction, higher design standards, shortage of technicians, and higher costs are placing a premium on the application of industrial control methods to construction operations. "Self-functioning" features in specifications were recommended, such as automation, contractor motivation, uniformity requirements, use of statistical methods, and labor-reducing features. Some of the possible better methods of control named were automatic adjustment of batch water, dewatering of sand, and reducing water requirements of sand.

Frank Kerekes, retiring A.C.I. president (left), with Cedric Willson, chief engineer, Texas Industries, Inc., Dallas, local A.C.I. chairman for the convention.

Concrete for Sewage Works A comprehensive paper on *Concrete for Sewage Works* was presented by E. C. Wenger, Portland Cement Association. He stated that concrete has performed satisfactorily in trunk sewers and in treatment plants. To prevent undue attack in concrete pipes it is necessary to maintain a flow of at least 2 ft. per second and to clean the surface periodically to prevent buildup of any encrustation of lime due to the action of sulphur gas. In a disposal plant involving both primary and secondary treatments there is no action which is destructive to concrete of good quality. As the tanks may be subject to repeated cycles of freezing and thawing, the use of air-entrainment is recommended. Although sulphate-resisting Type II cement is frequently recommended for deep sewage plants. Mr. Wenger stated that its use is not necessary, as Type I cement can be made sulphate-resistant by the inclusion of pozzolan in the concrete mix.

The fully precast roof system used in the Hill Air Force Base at Ogden, Utah, was described by D. P. Billington, Roberts and Schaefer Co., New York. The clear span area of the building was 130 by 270 ft., with inside clearance of 38 ft. Earthquake hazard and high wind velocity were considered in the design of the rigid frame structure. The long span required precast girders weighing 84 tons. The girders and roof slabs were cast on the ground at the site, and

Kenneth R. Lauer, University of Notre Dame (left) one of the winners of the Wason Medal for noteworthy research, with Roy R. Clark, consulting engineer, Portland, Oreg., holding the A.C.I. Construction Practice award.

post-tensioned to 65 percent of the designed pressure. The remaining 35 percent of the prestressing force was applied after the girders and roof panels had been lifted into place.

Awards Dean Kerekes presided at the traditional awards luncheon, which was exceptionally well attended. The respective winners of awards were:

Henry C. Turner Medal to Albert J. Goldbeck, a former president of A.C.I., who was until recently director of engineering of the National Crushed Stone Assn.

Leonard C. Wason Medal for the most meritorious paper to co-authors Lewis H. Tuthill and William A. Cordon, Bureau of Reclamation, Denver, Colo.

Leonard C. Wason Medal for noteworthy research to co-authors K. R. Lauer, Montana State College, and F. O. Slate, Cornell University.

Construction Practice Award to Roy R. Clark, U.S.A. Corps of Engineers, Portland, Oreg.

An unusual event was the announcement of the election to honorary membership of Arthur R. Lord, Palos Park, Ill., who was president of A.C.I. in 1934. In his acceptance remarks Mr. Lord referred in an interesting vein to his inspection of flat slab construction in an office building in Minneapolis in 1910, which started his career as a specialist in flat slabs.

In his address as retiring president, Dean Kerekes recalled that the A.C.I. membership had increased from 3,497 in 1947 to over 8,000 at present, and predicted a further doubling of members in the next ten years. He reviewed the institute's co-operative contacts with 20 other organizations, and cited the distribution of 60,000 copies of the Building Code, issued in April of last year, as an indication of the wide acceptance of A.C.I.'s leadership regarding the technology of concrete.

New Officers Two newly elected officers were introduced: president, Walter H. Price, head of engineering laboratories, U. S. Bureau of Reclamation, Denver, Colo.; and vice-president (2 years), Professor Phil M. Ferguson, chairman, Civil Engineering Department, University of Texas. Directors (3 years) elected include William H. Armstrong, consulting engineer, Atlanta, Ga.; Robert C. Johnson, president, Siesel Construction Co., Milwaukee, Wis.; Raymond C. Reese, consulting engineer, Toledo, Ohio; and C. D. Wailes, president, C. D. Wailes Company, Sun Valley, Idaho.

Materials Session Concurrent sessions on materials and design were held during the afternoon. Portland-slag cement was one of the materials discussed, as presented in a paper by Bryant Mather, Waterways Experiment Station, Jackson, Miss. Laboratory tests of all slag cements made in the U. S. in 1955 indicated performance at least equal to the requirements for Type I portland cement. The slag cements do not have the sulphate resistance required of Type II portland. Mortar-bar tests suggested that the pressure of the finely-ground slag would aid in the control of alkali-aggregate reaction.

The performance of concrete made with partial replacement of cement by fly ash obtained from burning lignite in two boiler plants of the Aluminum Company of America was reported by R. H. Breckenridge, Texas Power and Light Company, Dallas. This fly ash had a lime content of about 22 percent, which is higher than the fly ash commonly used in concrete. Use of this fly ash in two major projects for Alcoa, on the basis of replacements up to 30 percent of cement by weight, led to the following conclusions: (1) that this high-lime fly ash could be substituted for portland cement in 5- to 6-bag concrete up to 30 percent; (2) that 7-day strength would be reduced slightly, 28-day strength would be about the same as with straight portland, and 90-day strength would be higher; and (3) that workability would be improved. Alcoa is now using this fly ash on current new construction.

Results of examining sections of concrete pipe of various ages removed from five existing water lines in different cities were presented by W. J. McCoy, Lehigh Portland Cement Co. Others who collaborated in tests of the cement-lime ratio of the inner and outer portions of each pipe were R. J. Sweitzer, Lock Joint Pipe Co., and M. E. Flentje, American Waterworks Service Company. The analyses indicated that in none of the five pipes had any significant leaching of lime occurred.

Paul Klieger, Portland Cement Association, reported on recent test at the P.C.A. Laboratory on the influence of temperature during mixing, placing, and curing on the development of strength, both compressive and flexural, in concrete made with different types of cement. The temperatures ranged from near-freezing to 120 deg. F. Specimens were kept at the test temperature for 28 days, and thereafter at 73 deg. F. A surprising deduction from the plots of compressive strengths at different ages was that the highest ultimate strength was attained with the temperature during mixing and early age between 40 and 50 deg. F. The data also led to a recommendation that Type III cement (high-early strength) is suitable for winter construction if mixed and placed at the substantially normal temperature of 70 deg. F.

Unique Designs At the convention session on design Frank W. Chappell, consulting engineer, Dallas, described the unusual features involved in a 24-story luxury-type apartment building in Dallas. As a concrete exterior was desired, it was decided to use concrete for the entire structural frame. There were three departures from conventional concrete design: (1) use of lightweight aggregate; (2) use of high-strength concrete; and (3) use of high-yield-point alloy steel in columns below the sixth floor. For necessary wind-bracing, the stiffness of the frame was supplemented by using heavy concrete shear walls surrounding the stair and elevator wells.

The design of an office building as substantially a reinforced concrete cube to withstand bomb blasts was explained by S. Arthur Axtens, consulting engineer, Denver, Colo. The deep, continuous floor slabs were reinforced at both top and bottom by steel which continued into the walls, which were also reinforced with steel at both faces. The floors were cast monolithically with the wall span-

drels and columns for the full height between window heads and sills, thereby creating a continuous girder around the building at all floor levels. In addition to the strong exterior walls an interior central core was included, with walls heavily reinforced at both surfaces. The core would also provide security against bombing.

This session concluded with a description of the design of the Statler Hilton Hotel in which the convention was held, presented by W. C. Wing, who is associated with the New York architects who designed the building. Studies indicated that a flat plate design would be more economical than the conventional beam-and-slab system. Expanded shale aggregate was used throughout; concrete for the floor slabs had a specified strength of 3,000 p.s.i. and for the columns a strength of 3,750 p.s.i., both at 28 days.

Architect's perspective of the Dallas Memorial Project.

Research The morning of the third and last day of the convention was devoted to an open session of the Research Committee, at which Professor S. J. Chamberlain, Iowa State College, presided. Among the interesting projects reported in short papers the following may be mentioned:

A nuclear magnetic resonance moisture meter, which is a development of equipment used currently in the starch industry. Such a meter may offer instantaneous determination of moisture in fine and coarse aggregates.

Strength variations of cement, as indicated by test data previously published on strengths developed by samples of Type I cement drawn at intervals of two weeks from carload shipments of five brands of cement over a period of one year. The strength developed in successive shipments of each brand showed a much wider variation than in similar tests of a check cement. The report noted an increase in variation during a period of short cement supply, but did not offer an explanation for the lack of uniformity of the product from a given mill.

Effect of block patterns on structural properties of masonry walls laid in various bond patterns, including running, horizontal stack, and different diagonals. The inference was given that even diagonal bonds could be used in bearing walls.

Anchorage characteristics of strands in pre-tensioned prestressed concrete were checked by pull-out tests. It was implied that imbedment of at least 36 in. of 7/16-in. stranded cable was needed for transfer of strain from the strands to concrete.

Lightweight Concrete The final session was devoted to lightweight aggregate. R. C. Valore, Jr., Texas Industries, Inc., Dallas, reported on comparative tests of concrete block made with expanded shale aggregate, structural concrete with the same aggregate, and foam concrete with perlite aggregate, all with and without the addition of silica flour, under a curing cycle of 6 hours, at a pressure of 145 p.s.i. and temperature of 355 deg. F. Strengths with silica flour were in general higher than without such additions. Also, strengths for mixtures containing silica at 24 hours after curing in high-pressure steam were higher than the 28-day strengths after normal curing of mixtures without silica. During shrinkage of the high-pressure cured concretes was in general appreciably lower than that of comparable concrete cured at ordinary temperatures.

J. J. Shideler, Portland Cement Association, discussed the properties of lightweight structural concrete made with various aggregates. Expanded clay or shale aggregates have become a factor in construction practices, as there are now over 40 plants producing such materials. Concrete with these aggregates can produce strengths of 4,500 p.s.i. at weight per cu. ft. of 90 to 107 lb. Although heavy aggregate, such as good gravel, can produce higher strengths, in many structural applications, especially in tall buildings, such superiority may be overshadowed by advantages resulting from reduced unit weight of lightweight aggregate concretes.

An example of the performance of a lightweight shale aggregate which is crushed before burning were de-

Left: Raymond C. Reese, consulting engineer, Toledo, Ohio (left), with the Lindau Award, and Albert T. Goldbeck, consultant, National Crushed Stone Association, Washington, D. C., who received the Turner Medal.

Right: Other winners of the Wason Medal for the most meritorious papers: William A. Cordon, Utah State Agricultural College; and Lewis H. Tuthill, California State Department of Water Resources, Sacramento.

scribed by R. A. McCann, Basalt Rock Co., Napa, Calif. The surface of such aggregate is heated to incipient fusion in the kiln, thus forming a thin surface coating which greatly reduces permeability. Concrete with this aggregate showed greater early creep in prestressing than sand and gravel concrete in similar types of members, but at 540 days the creep loss in the two concretes was about the same. Mr. McCann showed views of various prestressed members, including roof slabs 4 in. thick and 40 ft. long.

In the final paper at the session, T. R. Jones, Texas A. & M. College, discussed the practical problems in batch design, handling, placing, and finishing of structural concrete made with uncoated expanded-shale aggregates. He pointed out that due to the fact that both coarse and fine particles are angular, a higher proportion of fines, up to 45 or 50 percent of that used with sand and gravel, is needed to give workability. He recommended air-entrainment up to 7 percent, for the purpose of lubricating the mix. Due to the absorption of such aggregate, pre-wetting by 8 to 15 percent of the dry weight was also recommended, preferably to be done by the manufacturer prior to shipment, in spite of the cost of freight on the added water. In placing, Mr. Jones recommended vibration at higher speed and lower amplitude than is commonly used with heavy aggregate.

Members of the local A.C.I. committee: Grayson Gill, architect-engineer; Cedric Willson, chief engineer, Texas Industries, Inc., chairman of local arrangements committee; and Terrell R. Harper, Harper and Kemp, architecs.

Entertainment The large number of ladies who accompanied their husbands enjoyed the special program of entertainment arranged by the local committee, which included hospitality coffee hours, an examination of a special F.B.I. exhibit, and a style show presented by the Neiman-Marcus store, famous style shop of the Southwest.

The excellent facilities of the new Statler-Hilton Hotel contributed to the pleasure and satisfaction of all those in attendance. The leaders of the Dallas committee who had made all arrangements and who saw to it that events occurred on schedule, included Cedric Willson, general chairman; E. E. Knott, treasurer; E. S. Collins, arrangements; T. L. Amis, banquet; W. L. Cobb, registration; and Mrs. Gray Thomas, chairman of the ladies' committee. At the annual banquet, which was followed by a floor show and dancing, Grayson Gill, Dallas architect, presided.

New Boston Highway Section To Cost $50 Million per Mile

Over 180 years ago, Griffin's Wharf was the jumping off place for a band of 145 Bostonian "Indians" in their now historic sacking sortie of three ships of the East India Company.

Today, history is again being made near the site of Griffin's Wharf where Boston, citadel of New England thrift, is spending $50,000,000 to build the most expensive mile of highway on earth.

This new superhighway is a part of an inner belt route which feeds traffic in and out of the city in a north - south direction. Looped around a series of man-made belts which were created as succeeding generations found it necessary to extend the city property farther into the harbor, it will rest on stilts on one end and sink at the other into the widest tunnel in the world—91½ ft. from wall to wall.

Fourteen Worthington 6½-cu. yd. Hi-Up truck mixers will deliver approximately 120,000 cu. yd. of concrete for this one-mile section, scheduled for completion in April, 1958, at a cost of about $8,700 per foot.

Three truck mixers proceeding on the up ramp of the world's largest tunnel. Immediately adjacent is the principal up-and-down ramp of the main structure. Just south of the lower mixer (according to a consensus of historical societies) is the exact location of Griffin's Wharf.

E. R. Bonner was recently appointed general manager of the American Ready-Mixed Corporation, Dayton, Ohio. Mr. Bonner was general manager of the concern for 17 years,

---

Joseph C. White has been appointed manager of Celluflor and roof deck manufacturing by the Inland Steel Products Company, Milwaukee, Wis.

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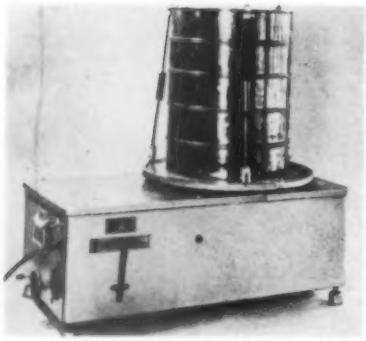
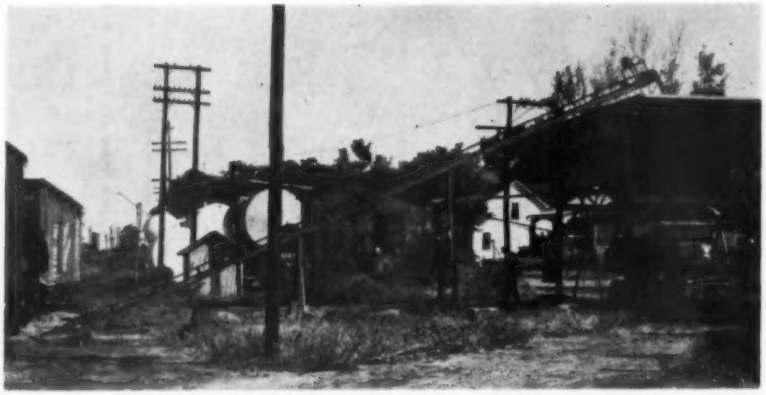


• Model No. 4 testing vibrator, manufactured by the Wheeler Company, Inc., is designed for sieves from 6 to 16 in. in diameter and grades either coarse or fine materials. Four compression spring anchor rods hold the nest of sieves to the turntable, which is given two motions. A rapid vertical circular motion is used to agitate the sample as it passes through the several sieves. A counterweight eliminates vibration from the base of the machine. Speed is controlled by means of a sliding motor base and a variable speed pulley on the driving unit. **(101)**

• Designed by the L. Burmeister Company for ready-mix plants, Porto-Plants, or central-mix plants, Tilt-Up mixers are available in 1- to 7½-cu. yd. sizes and discharge at a 60-deg. angle. Electric push buttons provide simple automatic control of the hydraulic tilting action. The 3-cu. yd. capacity mixer (illustrated) has a 24-in. diameter discharge opening, and a drum speed of 15.4 r.p.m. Dual electric gear motor direct drives are mounted on the tilt frame platform. **(102)**



• Material handling equipment manufactured by the General Conveyor and Manufacturing Company, Inc., includes this belt conveyor which is shown loading sand and gravel at a ready-mix plant. General Conveyor also manufactures bucket elevators, screw conveyors, apron feeders, belt idlers, bin gates, conveyor chain, and hanger bearings. **(103)**

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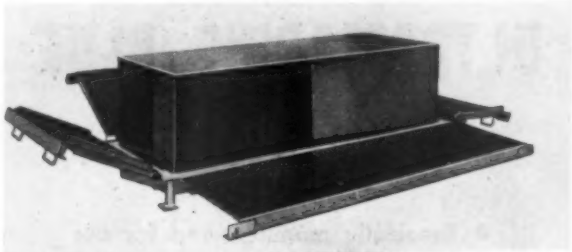
• Development of a new block saw for the production of two 4- by 8- by 16-in blocks from one 8- by 8- by 16-in. unit or odd-size blocks of any height has been announced by the Ty-Sa-Man Company. The saw handles up to 600 blocks per hour. Blocks are pushed through the cutting unit by two horizontal feed rollers. **(105)**

• New steel forms for pouring concrete burial vaults have been designed by Thomas Steel Forms. To prevent breakage of the finished product when stripping, the inside core of the deep bottom section is collapsible. An air activated valve or manual cam uniformly pulls the core side from the inside walls of the cured product. The four sides are hinged and to ressemble they are simply lifted into place and locked with "Quick-Release" pins. The core sides are realigned by air valve or manual cam. **(106)**



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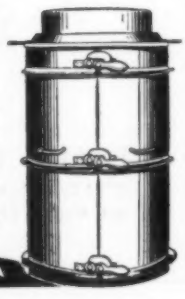

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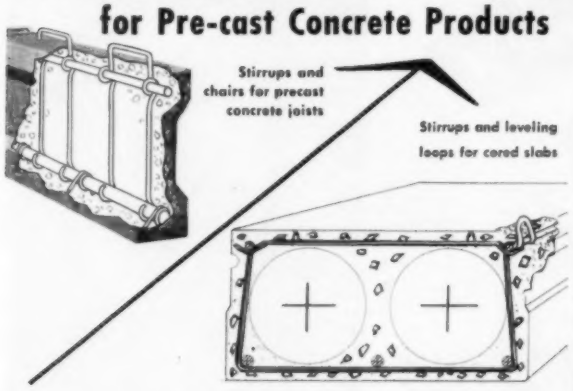

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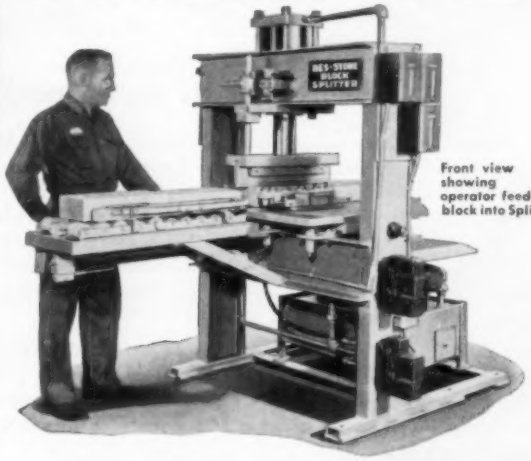

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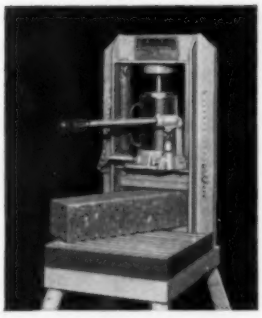

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"Our **BANTAM** averages 120 yds. per hr. loading sand and gravel from stockpile"

"Beats a bigger rig we own!"

Here's another case where the low-cost BANTAM outproduces a larger machine. Palmer Sand and Gravel Co. of Jackson, Mich., uses this BANTAM T-35 to load from scattered points around the pit. Equipped with ½-yd. rehandling bucket, the BANTAM loads a 5-yd. dump truck in 1½ to 2 minutes. With two 10-yd. trucks it loads out 450-500 yds. in less than 4 hours, averaging 120 yds. per hour! Commenting on performance, owner Ed Palmer says the BANTAM outstrips his bigger rig.

Regarding maintenance on BANTAMS, Ed Palmer says, "It just doesn't cost anything to run 'em." He now owns 3 BANTAMS—has been a user for 9 years. In all that time his only replacement cost has been one set of swing clutches and 3 sets of trunnion rollers. That's for all 3 machines!

If you're looking for big production at lower costs, look into the money-saving facts about BANTAMS right now. Use the handy coupon.

WORLD'S LARGEST PRODUCER OF
TRUCK CRANES AND EXCAVATORS

SCHIELD Bantam Co.

298 Park Street, Waverly, Iowa, U.S.A.

Please send details on BANTAMS for sand and gravel work with type of mounting checked below: RP-116

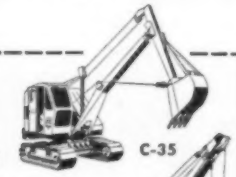
☐ Carrier ☐ Crawler ☐ Self-Propelled

Name.....

Company.....

Address.....

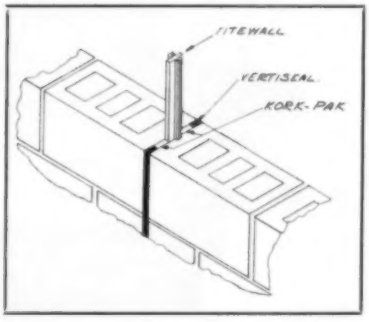
City..... State.....



C-35

CR-35

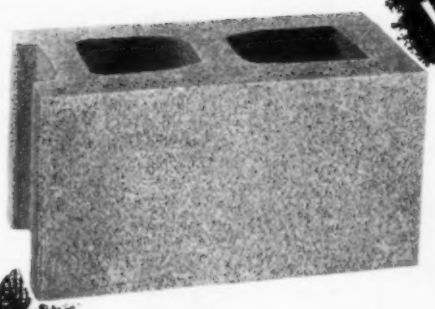
• Hydro-Fog, a power-driven unit designed primarily for spraying concrete forms, has just been introduced by the Hydro-Fog Equipment Company. A self-contained unit, Hydro-Fog is complete with power supply, fluid tank, and 60 ft. of hose. Pressure up to 300 p.s.i. comes from a 72 gal. per hour self-priming pump driven by a 2 hp. gasoline engine. A pump by-pass permits nozzle shut-off without damaging pump or engine. The 30-gal. capacity tank is made of heavy gauge welded steel. In addition to spraying forms, Hydro-Fog may also be used for spraying concrete mixers and other equipment during construction. **(107)**



• Titewall rubber joints, manufactured by the Servicised Products Corporation, gives protection against water leakage when used in control joints in concrete block and masonry wall construction. Planned joints allow for expansion and contraction of masonry walls and prevent irregular cracking. Made from a high-grade synthetic rubber compound which is durable and elastic, Titewall is available in 8-in., 24-in., 48-in., and 10-ft. lengths. The illustration shows application of Titewall in joint. **(108)**

Why the OSWALT Block Machine . . .

6 Good Reasons:



Texture smooth and uniform due to Oswalt long amplitude and low frequency filling of the mold.

Straight edges and square corners assured by Oswalt Density Control with Matched Vibration.

Uniformity in height maintained as result of extra finish on Oswalt Height Control.

Firm crack-free condition due to gentle handling on Shock-Free Block Ejector.

Well-filled quality of faces accomplished by Oswalt Adjustable Compound Vibration.

Dense compaction for maximum strength and durability is achieved by great force of Oswalt Matched Vibration.

OSWALT BLOCK MACHINE

is made up of a combination of Oswalt Services that are capable of producing superior quality Blocks at highest efficiency and record low cost. These Services are: Speed-up Mechanism . . . Shock-Free Handling . . . and Uniform Height and Density Control System.

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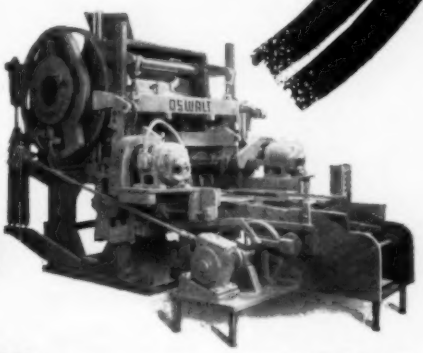

. . . makes BETTER BLOCKS

OSWALT ENGINEERING SERVICE CORP.

1335 CIRCLE AVENUE, FOREST PARK, ILL. • Phones: EStebrook 8-4664 (Chicago) • FOrest 6-2798 (Surburban)

Shock-Free Block Ejection by Harmonic Crank Oswalt Patent No. 2770346

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ADMIRO Heat Treated Alloy Steel is used in making these superior liners. This is a special high tensile alloy steel providing peak resistance to abrasion, assuring longest possible service. ADMIRO is also available in bars and plates, all shapes and sizes.

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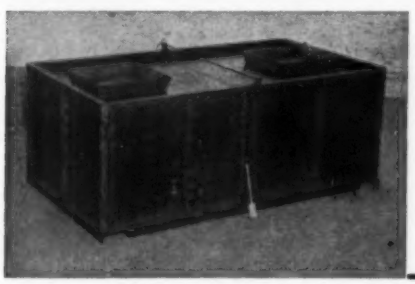

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- **alloy heat-treated ⅝" pins**
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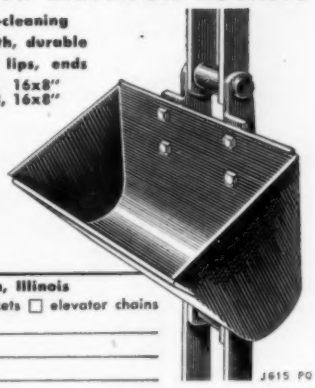

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J615 PQ

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Synclinal
FILTERS
American
Industry's
A-1 CHOICE

SUMP TYPE (cutaway)

LINE TYPE (cutaway)

In the plants of America's industrial giants, as well as in smaller plants, Marvel Synclinal Filters are being installed on all types of hydraulic and other low pressure liquid circulating equipment. Marvels are chosen because of their excellent performance in protecting machines and increasing production by reducing down-time. They are proving again and again, their superiority in the one real test—ON THE JOB! The BALANCED Synclinal Design of Marvel Filters provides that all-important balance between maximum ACTIVE filtering area and sufficient storage space for filtered out particles — therefore, longer periods of productive operation are attained at the absolute minimum of maintenance. They meet J.I.C. Standards.

Not only plant operators, but also, OVER 750 ORIGINAL EQUIPMENT MANUFACTURERS have recognized the superiority of Marvel Synclinal Filters and now install them as standard equipment.

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Both sump and line types may be easily disassembled, cleaned and reassembled by any workman, on the spot, in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

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Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

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- ☐ Catalog #301—For Water

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PQ-4

• Self-aligning concrete blocks, designed to interlock on all four sides, have been developed by the Lauger Loc-Bloc Corporation. The Kent Machine Company, in co-operation with Lauger, developed the machine which manufactures these blocks. The illustration shows the blocks without mortar lined up in a wall. **(109)**

• Models in the new Handymix line of mortar mixers introduced by the Speedmatic Research and Equipment Corporation range in size from a hand operated 141 lb. mixer mounted on steel skids to a powered mixer which will deliver over 3 cu. ft. of concrete per minute. **(110)**

• New 5- to 7-cu. yd. truck mixers featuring front engine power take-off with Fordomatic transmission have been introduced by the Willard Concrete Machinery Company. An automatic transmission provides four discharge speeds. Two levers, throttle and transmission, simplify the controls. **(111)**

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TRANSCRETES make you more money!

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T-14

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With a Champion machine you can convert $21.50 worth of sand and cement into $80.00 worth of superfine concrete drain tile at small labor cost and overhead. And at $80.00 for a 1000 4" tile you are way below the price of ordinary clay tile. Results: a better product—lower prices—broader markets — and a generous mark-up for yourself. All due to the fact that local manufacturing eliminates the three big costs that burden clay tile — freight, middlemen's profits, and breakage. An opportunity in every community. Champion machine is compact, versatile, easy to operate. Get all the facts by writing at once for the Champion book.

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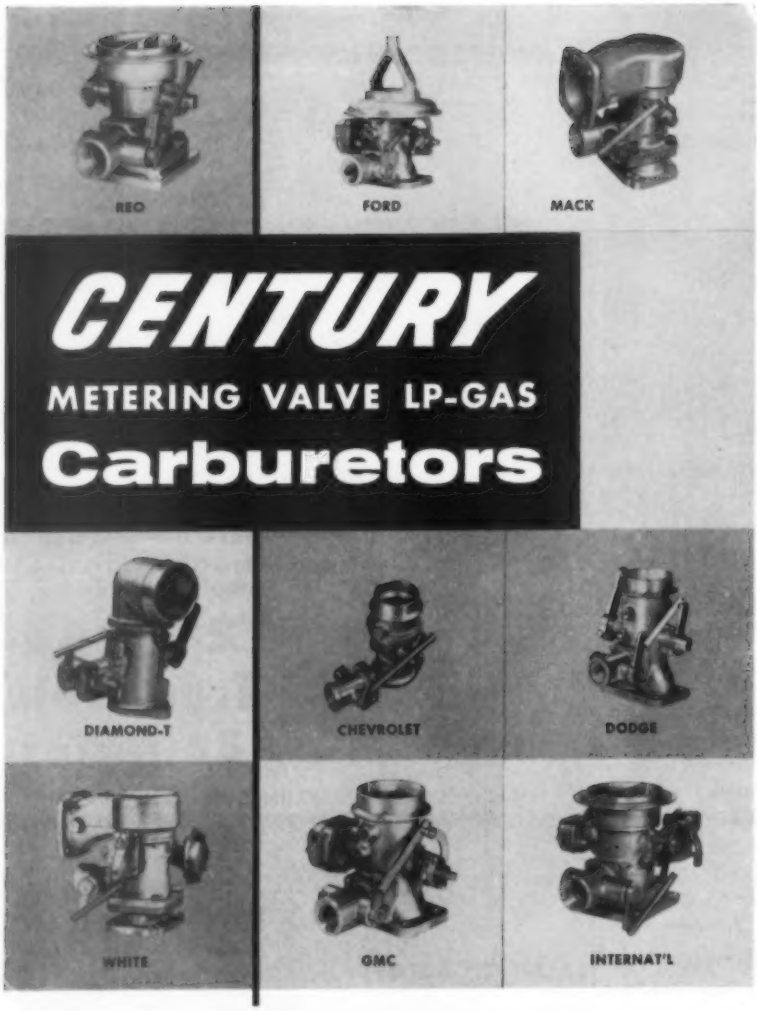

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New Literature

Prestressed and precast concrete members, anchors, and inserts for lifting are illustrated in Bulletin RP-1 issued by *Superior Concrete Accessories, Inc.* Various designs and capacities are illustrated in the bulletin. **(112)**

The new Justajack unloader is illustrated in a folder available from the *Ajack Unloader Corporation.* Of mono-weld tubular construction, the unloader has a 7,850 lb. load limit. Inside dimensions are 83½ in. by 60 in. **(113)**

Hawkeye multi-strand reinforcing wire for all types of masonry wall construction is described and illustrated in a brochure released by the *Hawkeye Reinforcing Wire Company.* Suggested specifications are included. **(114)**

Advantages of self-palletizing concrete block are discussed in literature available from the *Signode Steel Strapping Company.* Illustrations show packs made with Signode strapping and Signode strapping tools. **(115)**

PD concrete inserts, designed for precast, prestressed concrete products and structures, are featured in a bulletin issued by *Star Precision Devices, Inc.* Specification tables are included. Diagrams show the inserts in various applications. **(116)**

The 1957 Lith-I-Block machine is pictured in a bulletin recently published by the *Lith-I-Bar Company.* Features of the 1957 Lith-I-Block, including the new Dynabrake vibrator motors and the new shear-type moldbox suspension, are discussed. **(117)**

Invisible Crystal, a silicone exterior masonry water repellent, is the topic of a booklet offered by the *Wurdack Chemical Company.* The booklet tells how Crystal works, lists its applications, and gives instructions for application. **(118)**

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ASSEMBLE ON THE GROUND AND STAND UP.

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12 FT. TRUCK CLEARANCE ON 2 FT. PIERS.

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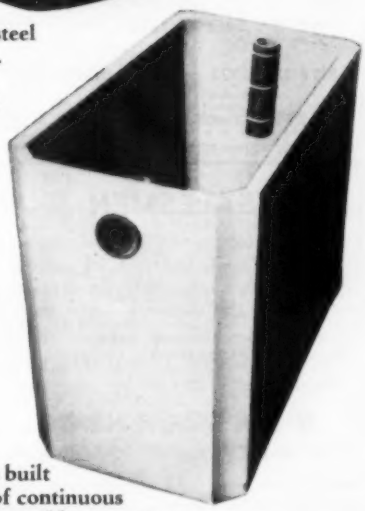
From the SMITH steel septic tank form . . . to the finished reinforced concrete septic tank . . .



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SMITH truck rig is built to give many years of continuous service. Entirely operated by one man.

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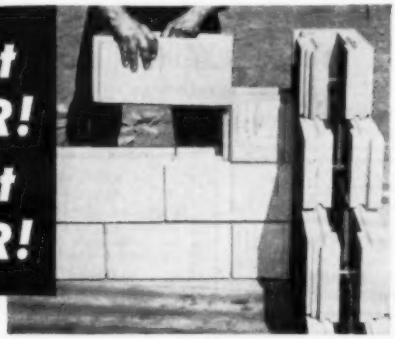

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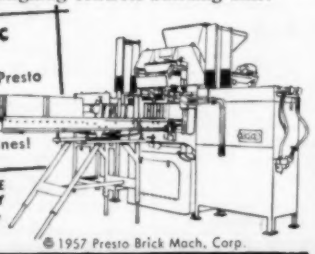
of either 8 or 12-in. high Presto Blocks on electronically controlled, hydraulically operated Presto Block Machines!



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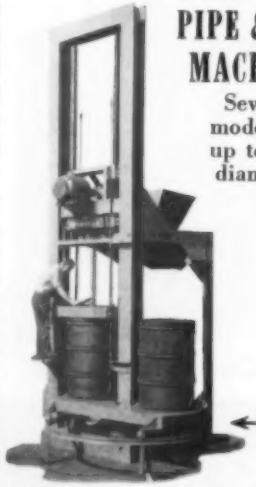

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336AS	3	3'x6'	956.00
138AS	1	3'x8'	675.00
238AS	2	3'x8'	815.00
338AS	3	3'x8'	996.00
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138BS	1	3'x8'	1231.00
238BS	2	3'x8'	1282.00
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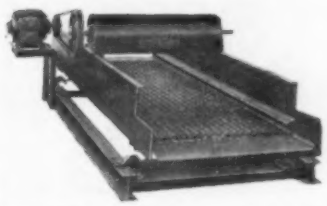
HEAVY DUTY MODELS, TYPE BS: Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14', 1 to 5 decks. Write for New 8-page Bulletin No. 1087.

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



GENERAL DUTY SCREENS, TYPE AS: Eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for New 8-page Bulletin No. 1086.

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Remember, You Save Up To 50%

Conveyor Prices Include Belting

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1397	$ 722
14"	50'	2222	1144
14"	85'	3377	1733
16"	20'	1262	636
16"	45'	2137	1088
16"	60'	2662	1358
16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1166
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
18"	130'	5362	2797
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
20"	90'	4052	2145
24"	25'	1590	898
24"	45'	2430	1330
24"	70'	3480	1875
24"	100'	4740	2514
24"	120'	5580	2950
24"	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
30"	90'	4831	2614
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096
36"	100'	5718	3214

For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting. Write for Bulletin 1138.

For 14" belt	$16.84 per foot
For 16" belt	18.04 per foot
For 18" belt	19.24 per foot
For 20" belt	20.37 per foot
For 24" belt	21.78 per foot
For 30" belt	24.75 per foot
For 36" belt	27.95 per foot

BONDED TROUGHING IDLER CONVEYORS ARE ALSO AVAILABLE WITH TRUSS TYPE CONSTRUCTION. WRITE FOR DESCRIPTIVE INFORMATION AND PRICES.

NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck ⅛" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.

Width	Ply	List Price	Sale Price
14"	4	$3.52 foot	$2.83 foot
16"	4	3.96 foot	2.97 foot
18"	4	4.38 foot	3.29 foot
20"	4	4.83 foot	3.80 foot
24"	4	5.68 foot	4.26 foot
30"	4	6.97 foot	5.21 foot
36"	4	8.26 foot	6.18 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting. This belt is for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

Width	Ply	List Price	Sale Price
16"	4	$4.71 foot	$3.46 foot
18"	4	5.23 foot	3.83 foot
20"	4	5.73 foot	4.37 foot
24"	4	6.74 foot	4.94 foot
30"	4	8.28 foot	6.07 foot
24"	5	7.90 foot	5.78 foot

The following belts are 5-ply, 32 oz. duck:

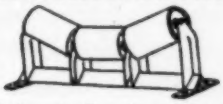
Width	Top Cover	Bottom Cover	List Price	Sale Price
24"	1/8"	1/16"	$ 8.56 foot	$ 6.42 foot
30"	1/8"	1/16"	10.52 foot	7.89 foot
36"	3/16"	1/16"	14.21 foot	10.66 foot

A heavier duty 28 oz. duck belt with ⅛" top rubber cover x 1/32" bottom rubber cover having 3500# to 4000# average cover tensile, 20# to 24# average friction pull. For the higher abrasion resistance applications and handling of materials where more strength is required to give greater belt life.

Width	Ply	List Price	Sale Price
18"	4	$5.67 foot	$4.20 foot
20"	4	6.22 foot	4.61 foot
24"	4	7.32 foot	5.41 foot
24"	5	8.53 foot	6.31 foot

Other widths, plies, duck weights and cover thicknesses available at low prices. Write for Free Sample.

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:

14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well known makes. Furnished with easily replaceable pre-lubricated sealed ball bearings. Also, can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers also available from $61.00. Write For Bulletin #1138.

NEW BONDED® FEEDERS

Bonded HDF-18 Heavy Duty Feeders were especially designed for abrasive materials such as Ore, Rock, Crushed Stone, Gravel, Sand, Clinkers, Abrasive Volcanic Ash and Rock. Abrasion Resistant Alloy Steel Plate is used for all parts that contact the material. Feeders are process control instruments as well as material movers and help to prevent screens, crushers, grinders, etc., from being run empty, choke fed, or overloaded. Capacities to 250 TPH. *Write for Bulletin #1182.*

Priced from $595.00

NEW BONDED BUCKET ELEVATORS

Bonded makes Open or Enclosed, Vertical or Inclined Bucket Elevators with continuous or spaced buckets mounted on chain or belting. They are recommended for small to medium size lumps, fine abrasive material such as dry sand, coke breeze, wet slag and many other bulk materials. Because of the wide variety of sizes and types, prices will be quoted on request. Write for Bulletin #1047.

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2186, Days
30 BELLVIEW

WRITE FOR FREE CATALOG AND PRICES

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

PHONE: AX. 1-2213, Evenings
COLUMBUS 7, OHIO

TESTERS

For

BLOCKS
CYLINDERS
CUBES
BEAMS
LINTELS
PIPE AND SLABS

If it's a concrete tester you need—get in touch with

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TESTER DIVISION
P. O. BOX 310 · NEW CASTLE, PA.

COLORS *For Cement and Concrete*

COLOR YOUR CONCRETE WITH LANSCO CEMENT COLORS, available in 40 ATTRACTIVE shades. Suitable for all types of concrete products. Write for our new color card, copy of "Suggestions For Using Cement Colors", and for free samples and price list.

Manufactured by:

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71 Delavan St. • Brooklyn 31, N. Y.

PALLETS

Guaranteed Quality

PLAIN STEEL PALLETS

FLAT • SQUARE • ACCURATE

Inquiries invited

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2300 S. Springfield Ave.
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SAVE $ $ $ ON . . .
"BRIKCRETE" MACHINERY

In near perfect condition—complete, ready to produce.

- Includes: Hydraulic Densifying Machine;
- #16 Mixing System; 10-Transfer Cars;
- 1—Lift Truck; 9—complete Mold Assemblies; Wood & Steel Pallets.

CAPABLE OF PRODUCING 5,000—8" OR 10,000—4" UNITS PER DAY

Will Sacrifice for Quick Sale

Write: **ALPS, INC.**
RD #6, VINELAND, NEW JERSEY
or PHONE OXford 2-9191

FOR SALE

One New Anthony, 28 cubic foot, Continuous Mixer. Still in original crate. $1600.00. Guaranteed.

FLEMING MANUFACTURING CO.
Cuba, Missouri

FOR SALE

2,850 1/4" x 18 1/2" x 26 Steel pallets used less than 1 year. Clean Condition—Bundles of 50.

Sale Price — $1.50 a yard

CONCRETE PRODUCTS MFG. CO.
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FOR SALE

1—L-3 two-block 1953 Lith-I-Block machine—in good condition. Includes parts for 4", 6", 8", and 12" blocks plus ½'s, etc.

$4,500

COOK CONCRETE PRODUCTS
1430 Buckeye St. Terre Haute, Ind.
Phone Crawford 1764

FOR SALE

2—Rex 3 yard Hi-Discharge mixers mounted on 1950 F800 Ford Hendrickson Tandem chassis. 10.00 x 20 14 ply tires. Trucks, Mixers and Tires in very good shape and very clean. Priced for quick sale.

MOLASCHI REDI-MIX
1793 PLAINFIELD ROAD JOLIET, ILL.
Phone: 6-2449

BESSER FOR SALE

Besser Super Vibrapac 3 at a time plain pallet machine in good running condition. Offbearing hoist motors and pallets included. No mold boxes.

PEERLESS BLOCK CO.
BOX 8398 SO. CHARLESTON, W. VA.
PHONE RI—43-424

FOR SALE

1—750 gal. Septic tank form
1—550 gal. Septic tank form
extra cores, lid forms, lift rigs, etc. $1,150.00

L170 International Truck
12" metal body with power take-off delivery rig for tanks or Concrete Blocks $1,900.00

All guaranteed in good condition. May be purchased separately.

EDWARD CAMPBELL CO.
S.E. Corner East Ave.-Walnut Rd.
Vineland, N. J.
VI 9-6700

FOR SALE

1 Columbia model 8, 12" High Block Machine (will use either 18 x 18 or 18 x 20 x ¼ Plain steel pallets)
Magnetic offbearer, pallet return with oiler and cleaner
1600 18 x 18 x ¼ plain steel pallets
58 racks
1 50 ft. Besser mixer, in excellent cond.
18 ft. Stearns skip and Mixer
Molds as follows: 2, 4, 6, 8, 10, 12 inch molds
1 Truckman rack truck with power jack.

This machine was installed Feb. 20, 1955, needs nothing but a new home. It may be inspected any week day until approximately April 10, when it will be replaced with Model 12, 3 block Columbia machine.

CARTERS
CONCRETE BLOCK PLANT
RFD #6 Monticello, Ind.
Phone 624 Monticello

FOR SALE

Complete concrete block plant. Hydro-Korpak machine, steam kiln, fork truck, delivery trucks—all equipment, including modern home. In production doing very good business. All in excellent condition. Terms. Northeastern Indiana.

ORLAND CONCRETE PRODUCTS
Box 98 Orland, Ind.

FOR SALE

2—4 cu. yd. Smith Mixers
1—2 cu. yd. Rex
1—2 cu. yd. Yeager
In working order, used in 1956 season.

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Cherry 4-3161

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Concrete Products Plant located at Buffalo, Minnesota—County Seat Town—Rich Farming and Dairying community—precast culvert and sewer pipe—block (sand and lightweight) Drain Tile—septic tanks—cesspools—lintels—anchor block, etc.—washing and screening plant and unlimited supply of material. Expansion possibilities great. Illness forces retirement.

W. S. Mattson, Owner

WRIGHT COUNTY CONCRETE CO.
Buffalo, Minn.

FOR SALE

Small Pre-cast Cast Stone Plant
Established 1925
Good area—Nice business
Original Owner Operated.

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New type of Hydraulic Automatic Stone Making machine up to 15000 stones a day proven completely satisfactory in Production. Also available excellent European make Automatic Hydraulic Block and Brick Making machine 5000 and 8000 a day production. Attractive prices. Write for particulars.

TRANSATLANTIC MACHINERY CO.
155 King St. E. Toronto, Ont., Canada
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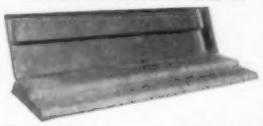
HIGH PROFIT LOW COST



Easy Stripping Metal Molds • Send for Free Bulletin

Here is a real money maker for that last bit of good cement from your mixer. Our completely new basement window sill fits 12" and 20" standard basement windows for 32" wall opening, @ $10.00, less 10% discount for ten or more. F.O.B. in lots of 10 they may be mixed for 8" wall 10" & 12" wall.

PARK MOLD & STEP CO.
1020 N. Raymond Rd. Battle Creek, Mich.

FOR SALE

Improved Brikcrete Machine
Pallets & Racks $3,000
Dunbrik Machine
Pallets & Racks $3,000
FOB Manchester

BRICK-CRETE MFG. CO.
732 Mast Road Manchester, N. H.

FOR SALE

ONE (1) LINK-BELT HEAVY DUTY ELEVATOR, ALL METAL, TOTALLY ENCLOSED, 10 INCH BUCKETS, ON CHAIN WITH HEAD AND TAIL PULLEYS. 35 FEET, CENTER TO CENTER. GOOD CONDITION, LOADED FOR $575.00.

WRITE OR CALL:
WEBB CONCRETE BLOCK CO.
P. O. Box 336 Phone 96 Scottsboro, Ala.

WATERBAN 21 PROTECTS POROUS MASONRY

A silicone-base transparent waterproofing that protects the surface and retains the natural beauty of the structure.
Write for Price Lists.

LAMBERT CORPORATION
HOUSTON, TEXAS - ORLANDO, FLA.

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All shades and grades the highest quality. Write for color cards, prices and samples

RICKETSON MINERAL COLOR WKS.
MILWAUKEE 2, WISCONSIN
Established 1885

SACRIFICE

$5000.00 Complete

Model K 47 Hydro-Korpak block machine with 5 HP, 3 Phase, 60 Cy. motor and attachments to make all standard 8" blocks. 25" Gyromatic mixer completely equipped with 10 HP. back geared motor, and hoist with 5 HP. back geared motor including magnetic switch for automatic safety stop at top and bottom. 1—Korpak Stripper block machine with power feeder and hopper with Nema type drip-proof motor.
3000 pallets—perfect condition.

MUST MOVE IMMEDIATELY

This equipment is in excellent condition and was used for experimental purposes only.

IDEAL ENGINEERING CO., INC.
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Phone: Liberty 6-2403

PLAIN STEEL PALLETS

made accurately to your specifications

THE REGENT STEEL CO.
3361 East 80th St., Cleveland 27, Ohio
Tel.—VUlcan 3-6500

METAL MOLDS & VIBRO—TABLES

PARK BENCHES

Splash-Blocks • Step Treads
Window Wells • Dist. Boxes
Chimney Caps • Wall Cap
Lawn Trim • Stepping Stones

Special Molds Made to Order!

Write Today . . . **SPILLMAN MFG. CO.**
Box 534, Station G
Columbus, Ohio

WITTEMANN MACHINERY COMPANY

FARMINGDALE, NEW JERSEY

Plant Design Layout Machinery Block

Specialists in Concrete Products Equipment

Eastern Representatives of the
COLUMBIA MACHINE WORKS, Vancouver, Washington

Elevators Bins Conveyors Feeders

FOR SALE

Lith-I-Bar L-5 block machine, 3 blocks per cycle, 720 per hour, 4" and 8" attachments, spare parts, in good condition, reasonable. Also 25 HP Ingersoll-Rand Air Compressor with Air Receiver and Air cooler, all in good condition, price reasonable.

SPEIGNER CONCRETE BLOCK CO.
DOTHAN, ALA. Phone: 2-5800

PLAIN PALLET CLEANING

We truck our machine to your plant and supervise entire cleaning and planing off of pallet residue. No need to shut down as we will keep up with production.

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Phone: Walnut 2-1135

PIT AND QUARRY GOES WHERE SALES ARE MADE

You too can dispose of your surplus equipment at very small cost.

IDLE EQUIPMENT + P & Q = CASH

Practically every day we receive letters from readers telling us they are seeking used equipment. A good way to get back a large part of the money you spent for machinery you are no longer using, is to sell it through the Classified Sections of Pit and Quarry and The Concrete Manufacturer . . . The largest classified advertising section serving the Industry.

PIT AND QUARRY CLASSIFIED SECTIONS
431 South Dearborn St. Chicago 5, Illinois

STOW DEVELOPS TWO NEW PRODUCTS FOR PRECAST WORK

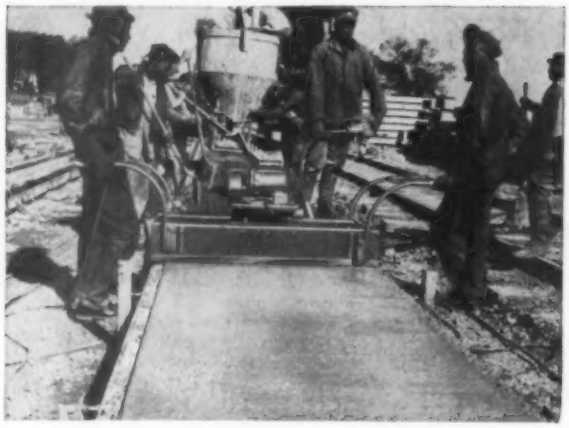
POWER MIDGET VIBRATOR

The manufacturers of precast concrete products have long needed a vibrator head "to work in the narrow forms we use" . . . a head about 1¼" in diameter. For a long time it was thought improbable that a head *this* small could really do any work.

Now, Stow Manufacturing Co. has developed a vibrator with a 1¼" head that really packs a wallop. It is powered by a ½ HP universal motor, with trigger switch, which drives head at 12,000 VPM. Thoroughly field tested, the Power Midget is ideal for precast work, perfect for any job where narrow forms are required (bank vaults, manholes, etc.).

TWIN BEAM VIBRATING SCREED

In addition to the Power Midget Vibrator, Stow Manuacturing Co. has developed and thoroughly tested this revolutionary machine for striking off thin precast slabs; a vibrating screed with *two* beams. *Working with this Twin Beam Screed gives the effect of making two passes at once.* The vibrating head transmits the vibration evenly to both beams. Thus as the screed is worked along, the first beam strikes off the concrete, while the second beam gives the concrete a final finish! For more information on the Power Midget Vibrator, or the Twin Beam Screed, contact your Stow Distributor. In most cities, you'll find him listed under "Concrete Vibrators" in the yellow section of your telephone directory. Or, if you prefer, send in the coupon below.



For complete information on Vibrators, Screeds, Roto-Trowels, Concrete Grinders, write for Stow Catalog 560.

STOW **MANUFACTURING CO.**

118 Shear Street, Binghamton, N. Y.

Please send me literature and specifications on the Stow Power Midget Vibrator and the Twin Beam Screed.

NAME.....

COMPANY.....

STREET.....

CITY..... STATE.....

Concrete Manufacturer

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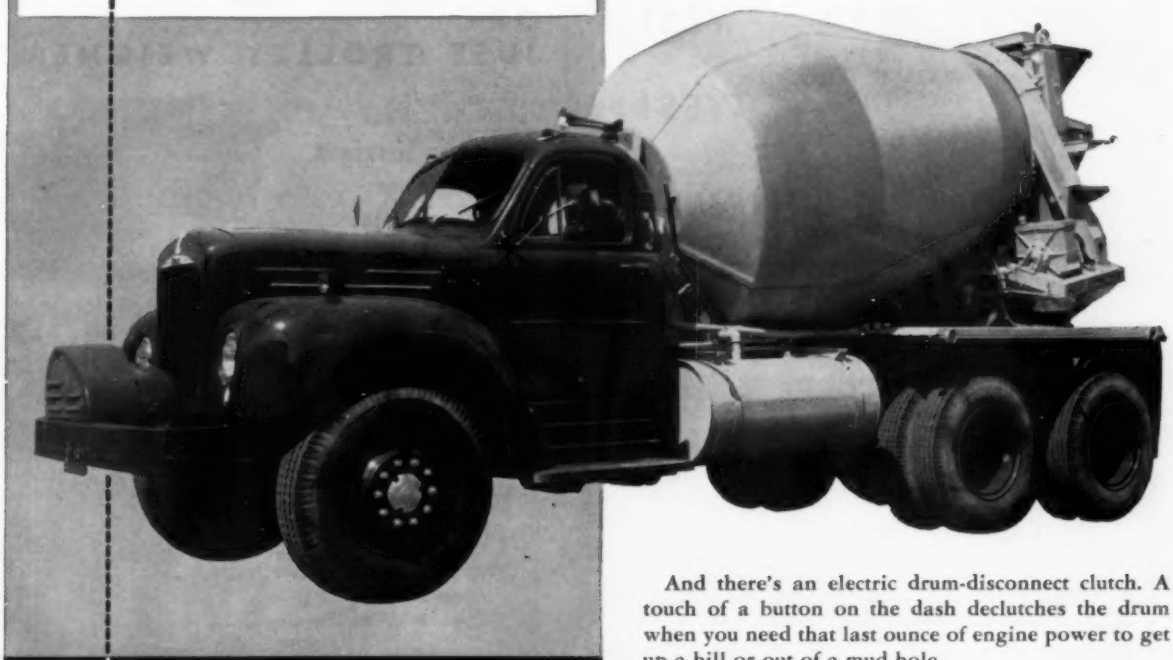
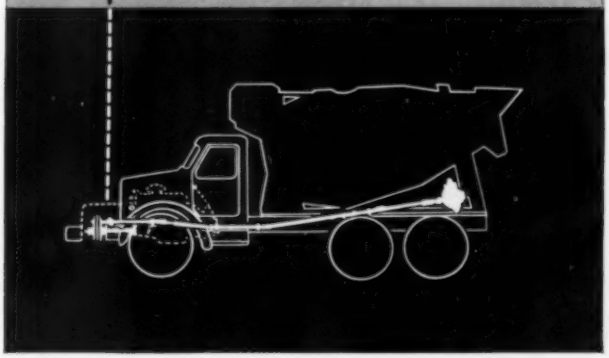
***See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK**

NO DOUBT ABOUT IT WITH REX® FRONT END POWER TAKE-OFF

You need have no doubt about performance when you have Rex Front End Power Take-Off! For Rex *alone* has the experience...the know-how you expect from The Leader. Proof? Ask any of the many owners of these "job-proved" truck mixers.

Rex "Front Engine" PTO (FEPTO) gives you the maintenance economies of single engine operation—and also nearly constant speed rotation of the drum. No longer does your drum revolve at the whim of your gear shifting or road speed.





And there's an electric drum-disconnect clutch. A touch of a button on the dash declutches the drum when you need that last ounce of engine power to get up a hill or out of a mud hole.

In the event of engine failure, you can attach external power to your drum but fast.

Two types of drum transmissions are available. There's the Rex 202 heavy-duty two-speed transmission—and now there's the Rex 101, an automotive-type transmission with four drum speeds, light in weight and low in initial cost. Both reverse, of course.

Investigate these features and others of the Rex Adjusta-Wate Moto-Mixer® equipped with Rex FEPTO.

Most truck manufacturers provide for the installation of the Rex FEPTO. See your Rex Distributor, or write CHAIN Belt Company, 4782 West Greenfield Avenue, Milwaukee 1, Wisconsin.

CONSTRUCTION REX MACHINERY

ADJUSTA-WATE MOTO-MIXERS®

LEADERSHIP...THROUGH CREATIVE ENGINEERING

CHAIN BELT COMPANY / 4782 W. Greenfield Ave., Milwaukee 1, Wis.

NOW!

Get the CONCRETE FACTS on Powdered PLASTICIZER!

1. Is it necessary? **YES!**
2. Does it make a better looking block? **YES!**
3. Does it SAVE wear and tear on equipment? **YES!**
4. Do most better brands do the Job? **YES!**

WHAT'S THE BIG DIFFERENCE?

COST!

FORRER'S XL-100 is 32¢ a pound. With Forrer's you use *Only 1* tablespoon per sack of cement. 128 tablespoons lb. = ¼ cent per bag of cement.

BRAND "B" Sells at the same price of 32¢ lb. — Yet there are only 64 tablespoons per pound. Therefore your cost is ½¢ per bag or double the cost of XL-100.

BRAND "C" You pay 17¢ per pound. BUT you need 1 oz. per Bag or about 1¢ per Bag. This is 4 times the cost of Forrer's XL-100.

BRAND "D" Is 15¢ per pound — Like Brand "C" it COSTS you close to 1¢ per Bag, or actually 4 times the cost of XL-100.

Look at the Facts! Then Decide on Forrer's XL-100. See Why . . .

"The Best — Costs You Less!"

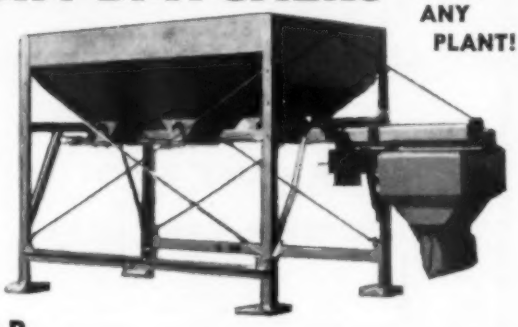
Note: Forrer's operates *only* through legitimate concrete supply agencies — never through grocery or super markets.

COMPARE!
SEE THE AMAZING DIFFERENCE!
Forrer's XL-100 is a dry hydrated powder with wetting and dispersing agents. It's easy to use and economical too—costs but ¼¢ per bag. Free sample on request.

Forrer's
PRODUCTS FOR MASONRY
SINCE 1928

Division of
SPRAY-O-BOND CO.
2225 N. Humboldt Ave.
Milwaukee 12,
Wisconsin

BIN-BATCHERS TO FIT ANY PLANT!

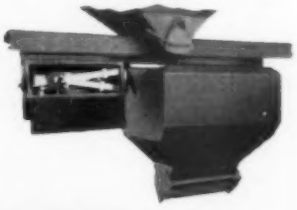


OR JUST TROLLEY WEIGHERS!

STEP UP YOUR PLANT EFFICIENCY WITH MODERN CONVEYING WEIGHERS.

BINS 14 TONS UP.

TROLLEY WEIGHERS 10 TO 84 CU. FT. MANUAL OR POWER PROPELLED.



GWYNNE *Concrete Plants*
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J. H. GWYNNE, INC. CAMDEN, OHIO

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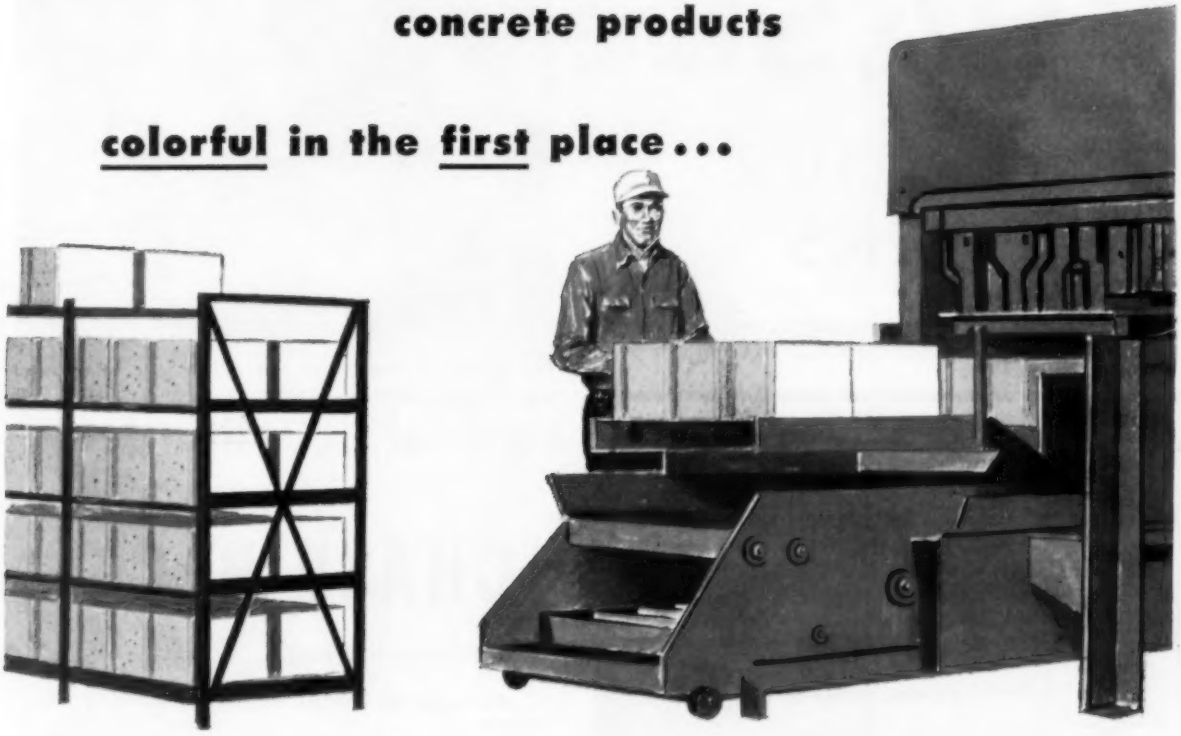
*See also Detailed Information in 1956 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

Make your customers'

concrete products

colorful in the first place...



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● Colorful concrete products business is *good* business. Today's style conscious public likes color, and lots of it, and many of your products get a color treatment soon after they leave your plant. Capitalize on this modern demand. Furnish building units that are colorful in the first place. *You can* when you use beautiful Medusa White Portland Cement in their manufacture. This white cement tints to any modern pastel shade . . . permits you to make a product that makes a double profit because it's color styled. Write your nearest Medusa Sales Office.

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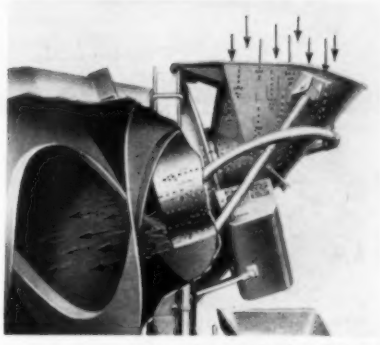
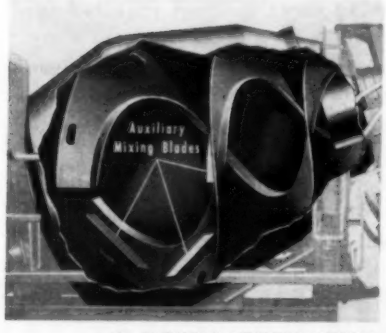
2 of 13 Westinghouse Mixers pouring 35 acres of floor on new Ford plant at Indianapolis.

Westinghouse is Tops in these 3 Essentials...



1—FAST CHARGING



2—DOUBLE-ACTION MIXING

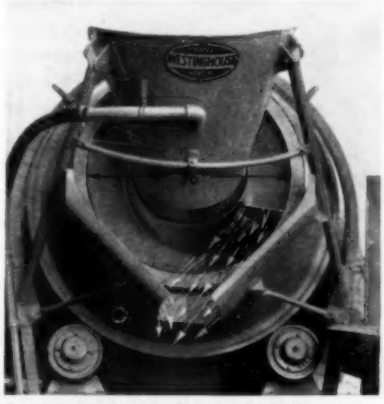
• What you want first in a mixer is one that charges fast, mixes any load thoroughly and discharges well. Here's why Westinghouse will do the job to your satisfaction:

1—Charging . . . With extra-large hopper (32″ x 34″) and cone which shoots material directly to mixing section of drum, you can load as fast as you want, and—without blow-back.

2—Mixing . . . Spiral "L" section mixing blades in drum are deeper than most and are equipped with 6 auxiliary blades which produce a criss-cross, double-mixing action. You get fast, thorough, uniform mix of any load in less time.

3—Discharging . . . Deep blades discharge any load through large 36″ drum opening as slowly or fast as you want it, including low slump.

AND—with Westinghouse you get an exclusive, patented, enclosed-gear drum drive and other features at no more than you pay for other quality mixers. See your local Westinghouse Transit Mixer dealer now or write for new 1957 catalog to



3—CONTROLLED DISCHARGING

TRANSIT WESTINGHOUSE MIXER

WESTINGHOUSE TRANSIT MIXER DIVISION
Le Tourneau-Westinghouse Company • Indianapolis 6, Indiana
Member Truck Mixer Manufacturers Bureau

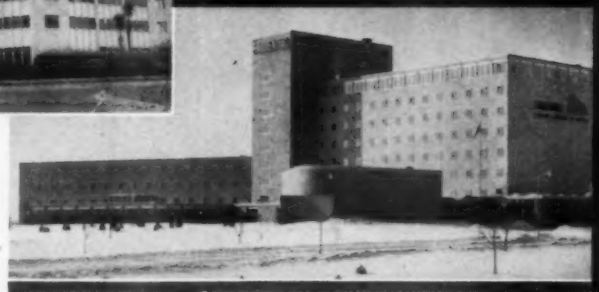
PRUDENTIAL

INSURANCE COMPANY OF AMERICA

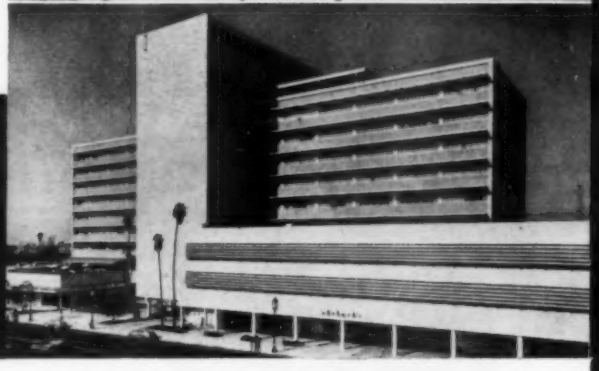
Left—Prudential Insurance Bldg., Jacksonville, Fla. Archt.—Kemp, Bunch & Jackson; Contr.—Daniel Construction Co. Pozzolith Ready-Mixed Concrete supplied by Capitol Concrete Co.—all of Jacksonville.

Below—Prudential Office Building, Minneapolis, Minn. Archt. and Engr.—Magney, Tusler & Setter; Contr.—C.F. Haglin & Sons Co. Pozzolith Ready-Mixed Concrete supplied by Ready-Mixed Concrete Co.—all of Minneapolis.

Left—Prudential Building, Chicago, Illinois. Archt.-Eng.—Naess & Murphy; Contr.—Geo. A. Fuller Co.; Pozzolith Ready-Mixed Concrete supplied by Material Service Corp.—all of Chicago.



Right—Prudential Insurance Co., Los Angeles, Calif. Archts.—Walter Wurdeman and Welton Becket; Engr.—Murray Erick Associates; Gen. Contr.—Wm. Simpson Co.—all of Los Angeles. Pozzolith Ready-Mixed Concrete supplied by Transit Mixed Concrete Co., Pasadena.



POZZOLITH employed for improved control of Concrete Quality...

"for the same owner time and time again"

These outstanding Prudential office buildings are representative of the many structures—often for the same owner time and time again—where Pozzolith has proved a valuable aid in economically obtaining concrete of desired properties. This is because Pozzolith provides the following three controls required for optimum concrete performance.

1. ***Control of water content***...lowest possible unit water content for a given workability. Results in greatly improved concrete quality and economy.
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3. ***Control of rate of hardening***...for speed where needed, for retardation where required—in any event good uniform concrete.

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COLORED MOTION PICTURE, "The Man With The Trowel", shows how Pozzolith and its adaptations—through control of water, air and rate of hardening—greatly improve your control of concrete quality. Film available for private showing to groups of any size.

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Boost Mill Grinding Capacity with RAYMOND *Whizzer Separation*

In closed circuit combination with a pulverizer, the Raymond Whizzer Separator does all the work of classifying, and leaves the mill to do the grinding only. It removes the fines as fast as made, so the mill always works on fresh material without wasting power. The result is greatly increased mill output, 25% to 75% or more, especially on high fineness products.

For classifying cement, both raw mix and clinker, the Double Whizzer Separator does an outstanding job in getting maximum capacity, uniformity and grade quality. With proper setting of the mill, the change from standard to the high early strength cement can be made by external adjustment while the Separator is running.

Flexibility in control, finely engineered construction, special lubrication system, and top-level efficiency in operation, are proven advantages that make the Raymond Whizzer Air Separator so widely used in modern plants for making cement, lime, gypsum and other non-metallics as well as chemicals, foods and many special materials.

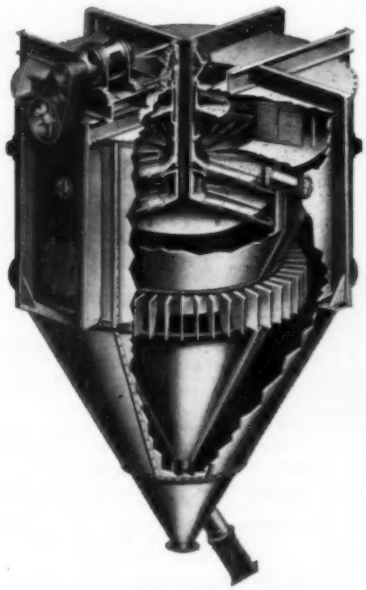
Varied Applications

A cement plant is operating a Raymond Separator in connection with 6 tube mills handling finish clinker. Separator receives feed at 74-76% passing 200 mesh, and delivers a uniform product testing 96% to 97% through 200 mesh at a capacity of 174 bbl. per hour.

In a gypsum plant, a Raymond Separator is used in combination with a hammer mill, pulverizing the gypsum to 50% minus 100 mesh. Separator removes fines and discharges them to the kettle at a fineness of 85% passing 100 mesh, and returns tailings to finishing mill with a low fractional percentage of fines.

For handling clay, a Raymond Separator is used with a rod mill. Feed to Separator averages 4 tons an hour of material testing 37% minus 200 mesh. Finished product tests 87% passing 200 mesh while the tailings show less than 1% of 200 mesh material.

In a hydrated lime plant, the former unit consisted of a hydrator and pulverizers alone, producing 6 to 7 tons an hour, and requiring 100 HP for separation purposes. The new unit with two Raymond Separators has a capacity of 15 to 20 tons per hour and consumes only 7 HP to the ton. The total cost of production has been cut as much as 25 to 30%.



Raymond Double Whizzer Mechanical Air Separator

Built in 8 standard sizes from 4 feet to 18 feet in diameter. Also furnished with a single type of Revolving Whizzer.

Write for Raymond BULLETIN No. 76

Raymond 30″ Separator

For small capacity industrial applications or experimental work. Furnished with motor and whizzer blades.

Laboratory Air Separator

Small motorized unit for running tests on a few pounds of material at a time.

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Raymond Division

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Consists of four Fairbanks-Morse diesels, each driving a 1,136 KW, 2,400 Volt, 3 Phase, 60 Cycle, AC Generator; with all auxiliary equipment, coolers, air filters, starting air compressors and tanks, fuel and oil day tanks, control equipment, switchgear, etc.

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Equipment on hand and ready for installation. Power Plant building and auxiliaries designed, construction drawings available. Arranged for two additional generating units if desired.

Principals Only
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Mechanical Eng. desires position with expanding Co. as Plant Eng. Twenty-five years experience as supervisor of service & erection of heavy Mechanical and Electrical installations for Cement, aggregate, chemical & mining installations. Location immaterial.

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50 H.P. Lambert double drum hoist.
15 Ton Stiffleg Derrick, 110' Boom.

WANTED

Gearmotors 3 to 15 H.P.
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SCREENS 4' x 6'6" Dble. Deck Gyrex. 60" x 84" Model 421 Rotex.

SEPARATOR Dings magnetic cross-belt.

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2—AMERICAN double-drum

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2—10 ton Plymouth, Model DHD; 40½" gauge, Four Wheels, Serial #5207 & #5208. New 1946.

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111-M Marion 3 yard H. L. Shovel
1201 Lima 2½ yard H. L. Shovel
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6160 Monighan Drag, 160′, 8 yd.
625 Page Diesel Drag, 150′, 10 yd.
4500 Manitowoc Drag, 140′, 4½ yd.
621-S Page Diesel Drag, 135′, 6 yd.
7200 Marion Diesel Drag, 135′, 5¾ yd.
621-S Page Diesel Drag, 125′, 7½ yd.
200-W Page Diesel Drag, 125′, 7½ yd.
7-W Monighan Elec. Drag, 120′, 7 yd.
618 Page Diesel Drag, 120′, 5 yd.
5-W Bucyrus Monighan Drag, 120′, 5 yd.
2400 Lima Dragline, 110′, 6 yard
111-M Marion Diesel Drag, 80′, 5 yd.
1055 P&H Dragline, 80′, 3½ yd.
1201 Lima Dragline, 85′, 3 yard
955 P&H Dragline, 90′, 2½ yard
3500 Manitowoc 60 ton Crane
802 Lima Cranes
4161 Marion Comb. Elec. Drag & Shovel
100-B Comb. Electric Dragline & Shovel
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8'6" x 35' Bartlett-Snow Rotary Dryer
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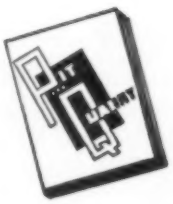

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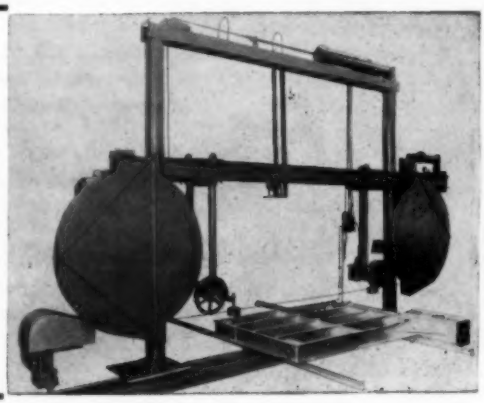

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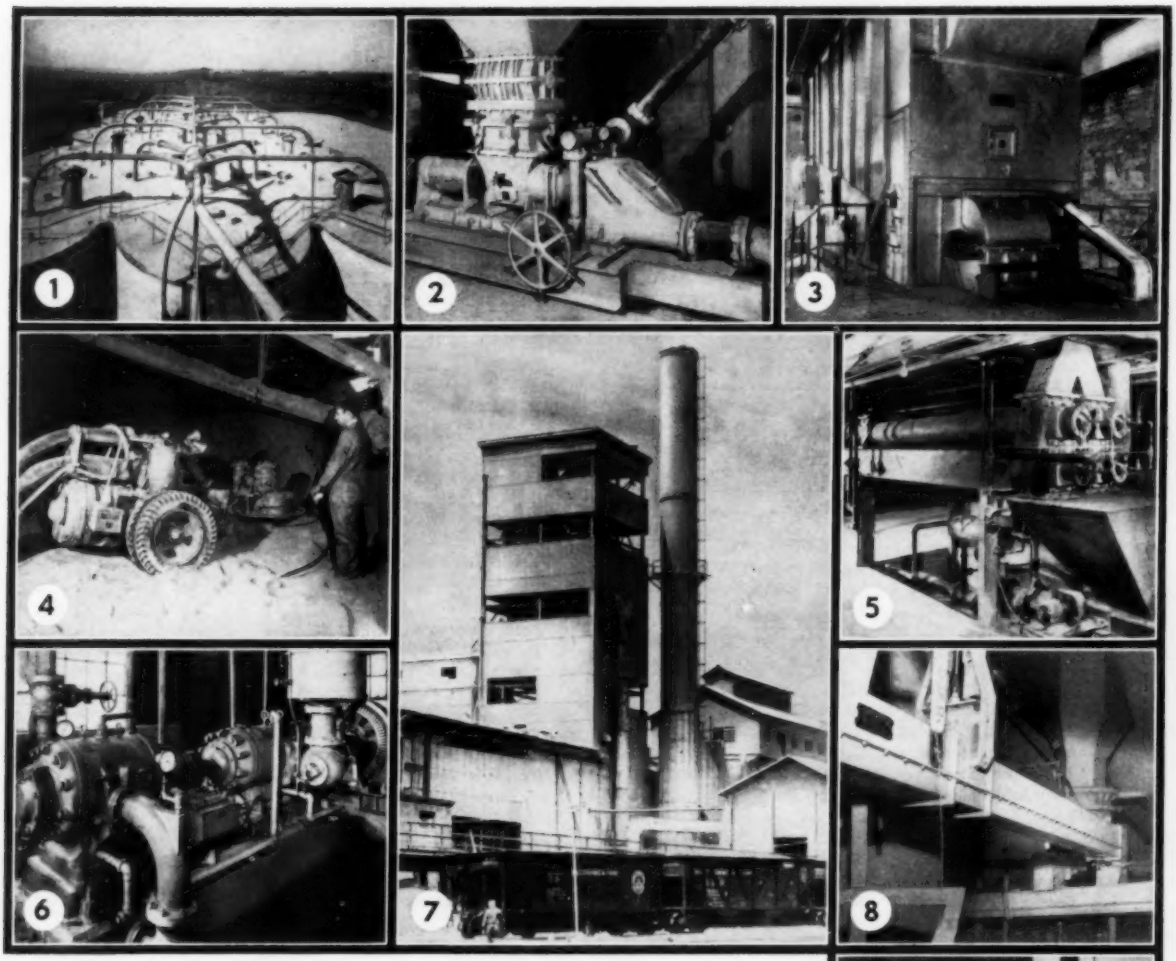

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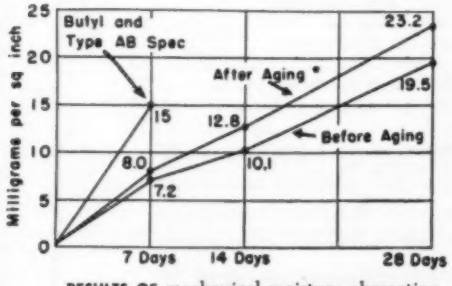

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TURNS IN ITS TRACKS . . . where many smaller loaders have to jockey.

DIGS INTO HARD-PACKED MATERIAL . . . exerts 20,000-lb break-out force, with 72 net engine hp and modern bucket design.

These are just four examples of how an Allis-Chalmers HD-6G tractor shovel offers a combination of strength, traction, flotation and mobility that enables it to replace a fleet of part-time specialized machines. You can count on it to boost production the year round. Ask your Allis-Chalmers dealer about the HD-6G . . . also the three larger tractor shovels with capacities up to 4 cu yd. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS *Engineering in Action*

B.F.Goodrich report:

Now rocks can climb longer, steeper hills on rubber

B. F. Goodrich improvements in rubber brought extra savings

Problem: To speed up quarrying operation, this company wanted to move their primary crusher down to the quarry floor. But then they would need a fast, inexpensive way to get the highly abrasive rock out of the quarry.

They looked for a conveyor belt that could stand the weight and continuous cutting of sharp rock.

What was done: B.F.Goodrich engineers recommended a rubber conveyor belt made with B.F.Goodrich Nyfil fabrics. In this belt, nylon is used as cross threads in the fabric to give extra strength without adding weight. Use of nylon increases flexibility, so belt troughs perfectly whether empty, lightly or fully loaded. Belts made with Nyfil fabrics hold fasteners better, have greater impact resistance, can carry heavier loads farther, higher, than belts made with all-cotton fabrics. Yet these longer-lasting belts cost no more.

Savings: The B.F.Goodrich Nyfil belt shown here carries 700 tons of rock an hour. After 18 months of use it shows no sign of wear and is still going strong.

Extra benefits: High-tension Nyfil fabrics make it possible to engineer longer center and high lift conveyors in a single flight. This means lower installation costs, lower power costs, higher operating efficiency and lower maintenance costs.

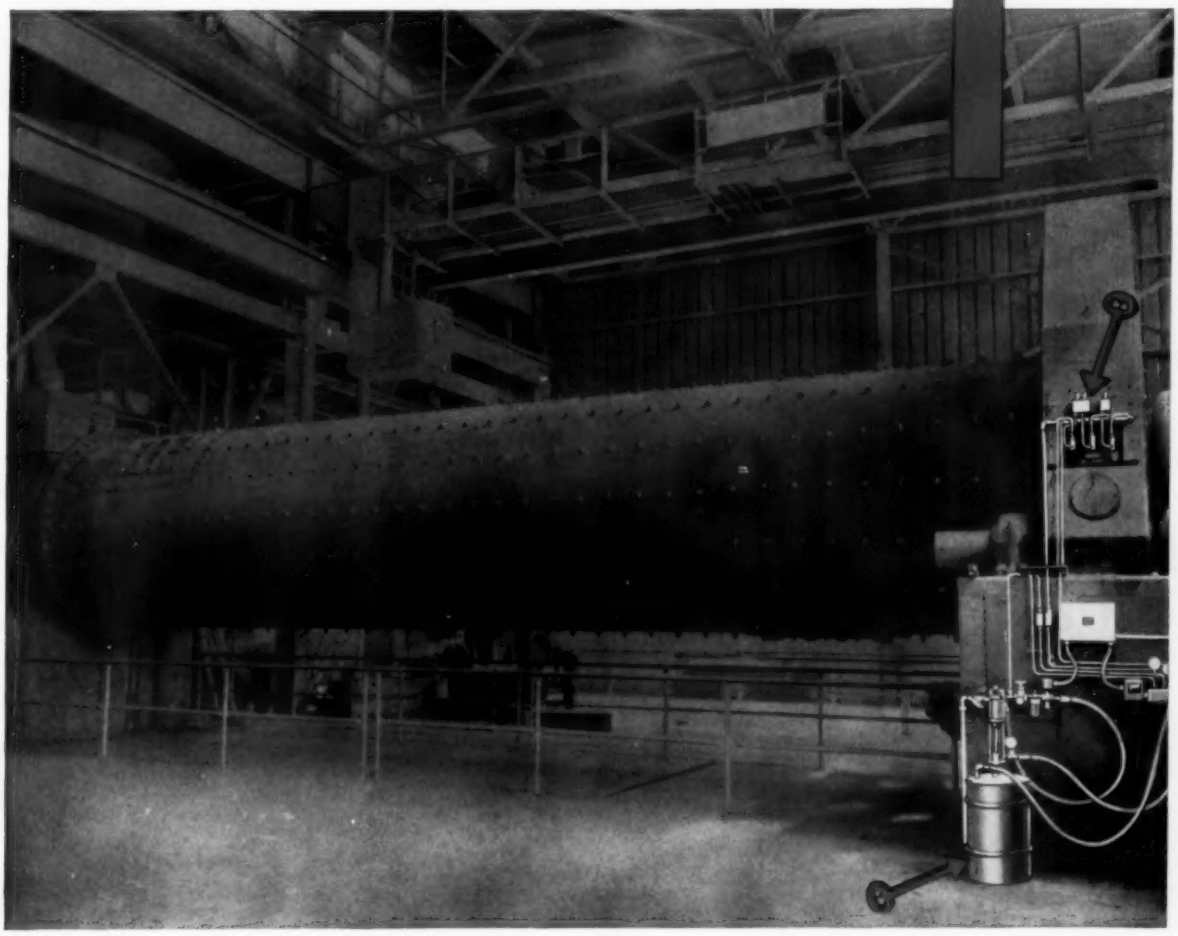
Where to buy: Your B.F.Goodrich distributor has full information on the conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-920, Akron 18, Ohio.*

B.F.Goodrich

INDUSTRIAL PRODUCTS

Farval Spray Panel lubricates ball mill at Canada's farthest north cement plant

FARVAL—
Studies in Centralized Lubrication
No. 198



● Lubrication of the ball mills for this most northerly cement plant is sure, safe and economical. The main gears and pinions are protected by a Farval system of automatic spray lubrication.

This mill is located in the $12,500,000 cement plant built recently at Edmonton, Canada, and now operating at near capacity to serve the expanding industry centering in Alberta's booming oil fields.

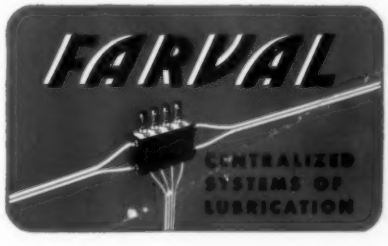
Farval automatic lubrication also is growing—in wider and wider use throughout industry and in ever increasing benefits to users. Hundreds of spray lubrication systems have been installed on gears and sliding surfaces. Millions of bearings are served by Farval manual and automatic systems.

There's a Farval system designed to serve your needs, too. It can save you money 4 ways—in oiling labor, in reduced downtime of equipment, in bearing expense eliminated and in lubricant saved.

Ask us to mail Farval Bulletin 26-R. And a representative will call at your convenience. The Farval Corporation, 3280 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm and Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

KEYS TO ADEQUATE LUBRICATION—
One of five 2-compartment 8′ x 37′ Allis Chalmers raw mills at Inland Cement Company Limited. Note Farval Automatic Spray Lubrication System at right above. Controlled by a timer, Farval sprays high viscosity grease on gear and pinion every 6 minutes.



MORE THAN 650 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD

BEAT THE DUST PROBLEM AND BOOST YARDAGE

Flying dust is no measure of getting yardage in a sand pit. But you can minimize this problem—keep your equipment in action—by lubricating on schedule with *Texaco Marfak*.

This world-famous chassis lubricant seals out dust and dirt, seals itself in the bearings... prevents rust. Its tough film stays put under heavy loads, keeping wear at a minimum.

On wheel bearings, use all-weather *Texaco Marfak Heavy Duty 2*. It provides extra protection against dirt and moisture, and assures safer braking for thousands of extra miles. No seasonal change required.

Or you can use just one lubricant, *Texaco Marfak Heavy Duty Special 2*, for chassis, wheel bearing, water pump and other grease lubrication. This lithium-base, multi-purpose grease resists water washout, stands up in the toughest service—always pumps easily at low temperatures.

Using *Texaco Track Roll Lubricant* on rollers assures smooth-running operation and complete protection against both rust and wear.

Your Texaco Lubrication Engineer is specially trained to help keep contractors' equipment running smoothly under all conditions. You can contact him by calling the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, New York.

TEXACO

TEXACO Lubricants and Fuels

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